The Builder.

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An American View of European Architecture.

IT is difficult for us who live among countries full of the remains of an architectural past, to realise the position of those who live in a country where there is, comparatively speaking, nothing old; who have no specimens of architectural development under their immediate observation, except the rapid changes in architectural fashion during the last few years; and who, until they cross the Atlantic, must get all their impression of ancient buildings from books or photographs. Americans, as every one knows, do show a great facility in crossing the seas, and some of them are only too prone to teach us everything about our own ancient architecture, and point out all its shortcomings and all our mistakes about it. But after all there must be a pretty large proportion of dwellers in the States who are not experimentally acquainted with ancient architecture, and to whom the title "European Architecture" on the back of a book has quite a different point and meaning from that which it has to us. The very expression serves to remind one that, to the spectator from another quarter of the globe, architecture, in its intellectual form, is essentially the European art.

The book issued by Mr. Russell Sturgis under the title "European Architecture,"* therefore, is essentially a view of ancient architecture from the American standpoint. The book is intended to show, we are told in the preface, that "the history of architecture is a study of absorbing interest." It is not meant as a guide to the architectural student in designing, by holding out any style especially as a model for study; what he is invited to study is rather the differences between ancient styles, and to seek out the causes of those differences, and understand their meaning and the influences under which they arose. "Wherein," for instance, "does Gothic architecture differ from Romanesque, and what are the causes of the difference?" An excellent kind of thesis, we may observe, to put before candidates for an Institute prize essay. The author suggests the direction of the study in the remark, "they are to be found in actual masonry and carpentry and, in a secondary sense, in sculpture and colour-decoration." This is the view of architectural style which, because it represents a truth long overlooked, is in the present day in danger perhaps of being a little over-emphasised, to the total exclusion of other influences. We are told that building materials, their nature and their fitness for this or that kind of construction or working, the shapes into which they can be most readily worked, the manner in which they lend themselves to the tool, are the influences which generate style; and to a great extent they are so, and this influence was far too much ignored until very recently. But certainly this is not all; there are other and more subtle influences at work to make style. No doubt there are some styles in the development of which structural difficulties and the nature of material have been exceedingly prominent factors. This is the case with the very instance Mr. Sturgis mentions, the development of Gothic from Romanesque. But what about the previous stage, the decline of Roman into Romanesque? One cannot here use the word "development;" it is rather a leaving out of detail, or executing coarsely and clumsily what had before been executed finely. In Byzantine architecture the main form of the building was a matter of constructional development following out a special problem; but what makes the carved quasi-Corinthian capital of the Byzantine so different from the Corinthian capital of the Roman? They were carved in the same material, they performed the same function in constructive design. There are more influences to be taken into account in regard to style than the practical and constructional ones, and the manner in which people keep repeating now that style is only the expression of structure shows rather a want of all-round thought on the subject, and tends to degenerate into cant, though we may admit that it is a more wholesome exaggeration than the converse one of neglecting structure and material, and regarding style as if it were something that might be carved indifferently, as it were, out of any material.

A more original suggestion as to the point of view for the study of architectural history is made by the author in his introductory chapter on "Archaic and Prehistoric Building," and it is one which, we may observe, is somewhat at variance with the mere "structure and material" theory. It is that the development of structure into architecture depended on the existence of something like a thought in the minds of the builders. "Thousands of hillsides and of river-banks have seen the buildings of half-barbarous people rise and fall again, with no result except the piles of ruin in which later, not more civilised people, quarry. Once only, in a series of centuries, appears an architectural thought destined to grow great and stimulate other thoughts and call out their embodiment in visible form." That is very well put and very true, but then what becomes of the structural and artisan theory? One such thought, says the author, sprang up in Egypt we know not exactly how many thousand years ago, and prevailed for an incredible length of time. But the important thought for us was that which commenced "somewhere in Grecian lands about 700 years before our era" (we hardly know whether we should limit the inception of Greek architecture to 700 B.C.), and two centuries and a half later grew into the Grecian architecture from which arose the Roman architecture, from which in turn arose all later European architecture. This of course is but a truism, in a sense; but one may well ask, why did Egyptian architecture exist for so long in forms little changed, and why is it not directly to it that we trace modern architecture? The reason probably was that though it was an architectural thought, there was not thought enough in it; it had not the power of development and adaptation; though grand and impressive, it was always what may be called a clumsy style. The Greek style was the perfection of intellectually conceived architecture, and therein lay its power over the world. It is conceivable that there may some day be a new "thought" in architecture as distinctive and as susceptible of influencing the whole world as the Greek idea, but one can hardly imagine this taking place until a new era, and after the decline of the present civilisations of the world. As it is, with our historical knowledge and continual travelling, we are dominated by the ideas of the past, and the strongest determination to shake off its influ-

* "European Architecture: A historical study." By Russell Sturgis, A.M., Ph.D., &c. New York and London, Macmillan & Co. 1896.

ence will not avail to do so. The Greek column has got possession of the human mind.

Taken generally, there is nothing new for architects in Mr. Sturgis's historical development of his subject; he goes through the various successive phases of architecture since the Greek era on much the usual lines, only occasionally introducing an illustration of a building that is rather out of the beaten track of architectural book-illustrations. In some places the manner of treating the subject, the nature of the diagrams, and even something in the wording, leave a certain impression of familiarity on our minds, and we are inclined to think that the writer's views and expressions have been coloured by some English architectural books of which, however, he makes no mention.

The author treats the development of the various styles in a clear and readable manner, and while he draws attention occasionally to some points which are omitted in most popular works on architecture, he occasionally misses some which ought to have been mentioned. He rightly draws attention to the fact, sometimes overlooked, how little connexion the sculpture of the Doric temple really had with the architecture, which was only a frame for it, so that it was not in the strict sense architectural sculpture. On the other hand his selection of the Erechtheion figures as the type of what is truly architectural sculpture gives a preference to what is really a very questionable way of using the human figure in architecture. A figure may be truly an architectural piece of sculpture, in the sense of being intimately bound up with the architectural design and not merely inserted in it, without making it absolutely a part of the construction, which is a totally wrong use to make of the figure; and so far from the Erechtheion figures being "an example of Greek good taste and judgment in such matters," they are rather an example of the fact that even the Greeks were liable to lapses of æsthetic judgment at times. The figures themselves are exquisite; their use as supporting members or columns is very questionable. In noticing the fact that though Ionic temples are as regular in form as Doric ones, few of those known to us (of Greek Ionic) are peristylar, the author seems to ignore the real point of this fact, viz.: that in its inception the Ionic column was essentially a column for front view only, as in the case of a temple *in antis*, and its design has a direct and obvious relation to its original position. The statement that the Greek temples were painted in strong colouring is much too emphatic and should have been given much more cautiously; the archaic temples may have been, but that the buildings of the great Attic period showed strongly contrasted colouring is an idea only to be doubtfully accepted, and for which there can hardly be said to be positive evidence; there is evidence of colour, but not of that crude and strong colouring which some restorers have imagined. Nor is it fair to the unlearned reader to tell him in a footnote that it is exceedingly probable and "rests on excellent authority" that the Greek theatres had no stage and the actors mingled with the chorus in the orchestra. It is a kind of craze of one very clever German archæologist, who (like German archæologists in general) wants to have a separate theory of his own on everything, and for which, so far, not a tittle of evidence has been found in the remains of any actual building. We have long observed however, that American archæologists are always ready to back up German opinions, especially where there is an English archæologist on the opposite side of the question.

In treating of the mediæval aud post-mediæval architecture the author groups the subject under six periods, from 750 to 1789; why European architecture is supposed to end at the date of the French Revolution we do not quite understand. The development of vaulting is illustrated in a manner similar to what we have seen in other works, but somewhat too briefly, and though it is clear enough for an architect, we doubt whether the amateur reader will make out the process very clearly from it, nor is the course of its curious development or inversion into fan-vaulting made clear. We are glad to see, however, that Mr. Sturgis, unlike most American writers on architecture, can recognise the merits of English Gothic, and does not occupy himself in endeavouring to prove that there is no Gothic architecture in England worth taking into account.

The illustrations are numerous and by different draughtsmen and from different sources; none of them by the author (it is curious how rarely writers on architecture seem to unite drawing with writing). The fact of the drawings being by various hands may explain the very different ideas which seem to prevail as to scale. Many of the illustrations are far larger than necessary, fill too much of the page, and would have gained in other ways by being reduced to a smaller scale. Some of them also have the appearance of having been traced from photographs, without any care being taken to correct the distortion of the photograph; see for instance the drawing of the monument of Lysicrates, and others, in which all the lines are leaning out of the perpendicular in a most unsightly and annoying manner. A great deal of work has been done in the illustrations, some of it very good, but there seems to have been a want of a definite plan and a directing mind in preparing them.

CONTRACTORS AND TENDERS LISTS.

THE reports which have been recently circulated respecting the Works Committee of the London County Council, whether true or false, raise the question of the treatment which ought to be accorded to competitive tenders for building contracts. Some contractors seem disposed to claim a sort of right to know the respective amounts of their fellow competitors' estimates, and some that the lowest tender has a right to acceptance.

We have received from a firm in London, of wide general experience and high reputation, a letter which, in moderate language, complains of their having been recently denied information as to the amounts of the tenders for a public institution, and goes on to say that the "contractors who are *invited* to tender should have every available guarantee that it shall be solely on its merits that a tender shall be accepted." A good deal, in our opinion, depends, in this case as in others, upon whether the contractors were invited individually to give prices, or only invited by public advertisement. In the former case the rule of openness and acceptance of the lowest tender ought undoubtedly to be strictly adhered to, unless some exceptional and distinct intimation is given that other circumstances will be considered. The usual clause, to the effect that the employer does not undertake to accept the lowest or any tender, should in such cases be regarded as a safeguard, only to be put in force in case of necessity from some unexpected cause; it must be assumed that only those were invited to whom the employer was willing to give the work. It is extremely unfair to put people to the trouble of preparing estimates merely to check that of some favourite, or to ensure that the latter will put in "competition" prices. Employers do not always very readily see the matter in this light, but we think that architects should explain it to them, and that if they desire a competition it will be only common fairness to accept the most advantageous offer, or to explain beforehand—though we can hardly imagine anyone doing so—that there *is* a favourite whose tender will be accepted if it is within so much of the lowest.

Where tenders are publicly advertised for, and any one may compete, the matter is on a somewhat different footing; it may very well be that good and proper reasons will be found to exist why it would be at least very undesirable to accept either the lowest or possibly more than one of the lowest. To state these reasons, however good, might obviously in many cases be unwise; to give ground for their being requested would frequently lead to trouble and ill feeling. In such cases the lesser of two evils is probably chosen when the objections to concealment are ignored and the prices kept secret.

Concealment is, of course, in itself, undesirable. Not only are there too many suspicious people in the world, who are ever ready to detect the vile countenance of the veiled prophet in everything which is hidden, but it does make great unfairness at all events possible. We should rather doubt, however, if the possibility is taken advantage of in any appreciable number of cases; we are sure that the suspicions of fraud are generally groundless; and it may be added that contractors must often see advantage in having their estimates concealed from their colleagues.

As regards tenders for public works, to which our correspondents chiefly refer, we believe that many public bodies make it a rule not to divulge the amounts of tenders. It must not, in that connexion, be overlooked that many of them are under the compulsion of statute or by-law to let all contracts above a certain small amount by public advertisement, and that the considerations we have named above have probably dictated the rule.

NOTES.

The new Electric Railway Scheme.

THE newly-proposed electric railway from Hammersmith to Cannon-street Station via Knightsbridge, Piccadilly, the Strand, and Ludgate-hill, appears to have been very carefully considered. The proposition is to construct two cast-iron lined tunnels, about 11½ ft. diameter, much on the same lines as the City and South London Railway. The total length will be about six miles, with a depot in the neighbourhood of Brook Green. The trains, which are to hold about 300 passengers each, are to run at two and a half minutes intervals. There are in all fourteen stations, in such convenient centres as

Cannon-street Station, Ludgate-hill, [the Law Courts, Trafalgar-square, &c. As the line is to be from 50 ft. or 60 ft. below the surface, lifts will of course be provided at the stations, and ventilation, the weak point in locomotive traction, will be easy with electric haulage, especially as the double tunnel facilitates the frequent change of air. If passengers do not object to be carried in a narrow tunnel at so great a depth below the ground, the project seems likely to be a success, and there do not appear to be any unusual engineering difficulties to be overcome, but we should have thought a larger size of tunnel desirable, and to obtain the requisite speed to command through traffic it is perhaps surprising that a third tunnel with intermediate stations, say at Piccadilly and Kensington Church, was not proposed. Were this done a five minute service might be run *inwards* in the morning, and *outwards* in the evening, diverting alternate trains from the slow service for the purpose; an arrangement by which the value of the scheme would be greatly increased.

Paris Exhibition Buildings.

THERE appears to be a difficulty in regard to the final arrangement of the plan of the large palace on the Champs Elysées (the future exhibition building for the Salons), in consequence of the restricted limits of the site. The final modification of the design was to combine, for the principal façade, the colonnade of MM. Deglane and Binet with the projecting central portico, with three large arches, in the design of M. Girault, and in this portico were to be placed two staircases, at the angles; it was even suggested that the staircases should be emphasised by being placed in half-open towers, as in the château of Blois. It is now found that the carrying out of this project will emphasise the central portico far too much in proportion to the lateral pavilions, and the staircases are to be relegated to the inner vestibule; but before anything further is done MM. Girault and Deglane ask that a model of this part of the building should be made in plaster, to a scale $\frac{1}{100}$ the actual size. It is evident that this building is regarded as a serious architectural effort over which no pains are to be spared.

City and Guilds Institute.

THE Report of the Examinations Department of the City and Guilds of London Institute (1895-6) states that "the general results of the year's examinations is satisfactory," but there seem nevertheless to be a great many complaints. Want of knowledge of drawing and of the habit of accurate observation among candidates is one. A difficulty is experienced in finding competent teachers for Trade classes. The number of candidates in Plumbers' work was large, but the results were unsatisfactory, and "a very small proportion of the candidates appear to have received any adequate instruction." In Electric Lighting the results are somewhat better, but the percentage of failures is 46·8, and the sketches and diagrams are of very bad quality. In Pottery and Porcelain, again, "the number of candidates was small and the proportion of failures large." A communication has been addressed to the Staffordshire County Council on the subject, and that body has arranged for the establishment of a Central Laboratory under a Head Inspector, and for the award of studentships on the results of the Institute's Examinations. The conclusion from the Report is that the Guilds' Institute, for some reason, is hardly succeeding very well at present in the objects for which it was founded.

Borough of Shoreditch.

THE Municipal Reports and accounts of the Borough of Shoreditch for 1895-6* make a volume of nearly 400 pages, containing information which must be of interest to ratepayers, and which its wider value as a record of some of the problems and expenses of Borough management. Among the works recently carried out or in progress we find mention of the success of the Shoreditch Technical Schools, out of which has arisen a scheme for endowing a Central Technical Institute for the Borough. A combined Electric Lighting Station and Dust Destructor is in course of erection, in which refuse will be utilised as fuel for creating electricity, and it is stated that on this system the municipal body has been able to contract to light the London Walthamstow and Epping Forest Railway at the rate of about one-third the cost of gas. If there is no other side to this statement, it is a remarkable testimony to the economy of the union of Dust Destructor and Electric plant. Among other works mentioned are the construction of the first underground convenience in the Borough, the decoration of the Town Hall, the favourable progress of a large scheme for artisans' dwellings (Moira-place), various street improvements, &c. We should not omit to notice, also, that the Vestry recently passed a set of new By-laws for regulating their own business and procedure, which may prove as useful as any other form of public improvement.

Private Railway Sidings.

IT will be remembered that the question of rebate due to traders using their own sidings received special attention during the protracted Parliamentary proceedings which preceded the passing of the Rates and Charges Acts of 1892. The owners of private sidings had undoubtedly been paying the companies for services which they performed themselves, and for accommodation provided at their own expense. This anomaly was remedied by Parliament, but it would appear that even now such traffic is sometimes liable to a charge for the extra labour involved in placing it in a convenient position, which may almost equal the sum chargeable as "station terminal." A test case was commenced in December, 1894 (Pidcock *v.* Manchester, Sheffield, and Lincolnshire Railway Company), with a view to determining what conditions must be fulfilled to entitle siding owners to rebates; and it was decided that the company was not entitled to make any charge at all for station terminals in that particular instance, although they succeeded in establishing their right to certain "service terminals." But under another clause the companies are empowered to make a reasonable charge for "special services rendered at or in connexion with private sidings," and they promptly claimed a sum about equal to the amount which had been disallowed for station terminals. The Railway Commissioners have just delivered judgment upon this point, and decided that the company were entitled to three-fourths of the sum actually charged as station terminals. This decision is of considerable importance to owners of private sidings, whose traffic is dealt with under similar conditions.

* London: Roberts & Son.

Pavement Lights.

A PERSON was summoned last week for non-compliance with a notice to remove an obstruction. The case was somewhat interesting. The obstruction complained of was an area light of iron set with glass cubes let into the pavement so as to light an area under the footway. This light was permitted by the Metropolitan Board of Works, being at that time on a level with the pavement. But recently the Vestry re-laid this pavement with the result that the light became three or four inches lower than the surrounding surface. The magistrate had thus to decide the point whether this was an obstruction within the meaning of the Metropolis Local Management Acts, and he held that it was. It is clear, therefore, that any such light, though legal at one time, may become illegal at another, if the Local Authority makes an alteration in the general level of the pavement. In other words, the house-owner puts in the light at his own peril.

Scarborough School Board Competition.

As we have repeatedly drawn attention to the unfair and unreasonable system of Competition Committees in demanding a deposit of money for seeing the conditions of a competition, which is not to be refunded unless a design is sent in, we have pleasure in noticing the different conduct of the Committee of the Scarborough School Board Competition, advertised in this issue, who require a guinea deposit which will be refunded either if a design is sent in, or if the conditions and plan are returned uninjured within six days. If a deposit is required at all, that is a fair and reasonable way of acting, and we hope it will be an example to other Competition Committees.

The Haymarket Galleries.

THE annual winter exhibitions at the two picture galleries next door to each other in the Haymarket, Mr. Maclean's and Messrs. Tooth & Sons, were opened simultaneously on Monday, the 2nd inst. At Messrs. Tooth's gallery we have an opportunity of again seeing Lord Leighton's "Andromeda," one of the most interesting of his later works and perhaps one of the best treatments of the legend in painting. There is no other work of the first class, for we do not consider Professor Pradilla's large and ambitious painting of the surrender of the keys of Granada as such; there are smaller works of more or less value by M. Bouguereau, and by Mr. Leader, Mr. Blinks, Mr. de Blaas, Mr. Seymour Lucas, and other contemporary artists. Among works that are above the average level of interest are Mr. Ter Meulen's "Sheep-washing" (an effective contrast to some mechanical sheep in the picture hung next to it), M. Gow's "Planning the Campaign," and M. Muenier's "Rentrée du Troupeau." In Mr. Maclean's gallery are to be found a work of Mr. Tadema's of some years back, "Twixt Hope and Fear;" a good lion picture by Herr Vastagh; "The Convalescent," a good picture by Herr Weiland, rather in the school of Israels; "A Shepherd and his

Flock" by Herr Westerbeck, two or three examples of Herr Israels, of which "The Fisherman's Bride" is a small work in his best way, and "The Widower," we should almost be inclined to say, in his worst; a large painting by Herr Harlamoff, "Italian Fruit Sellers," of exceptional merit for colour and rich and broad style of execution, and a very interesting and expressive head, "The Actress," by the same artist. *

Mr. Elmslie's Water Colours.

THE title "From Youth to Age" has no particular significance as describing Mr. Elmslie's collection of water-colour drawings at the Fine Art Society's Gallery, which are a series of small works in which figures, generally of young women, are combined with landscape, and many of which have much beauty both of sentiment and artistic form. Among the best are "Binding" (1), a young man and girl at work in a cornfield, notable also for a very good sky; "Mizpah" (6), the parting of a young rustic couple by a brook; "The Robin" (10), a fine piece of colour and a well studied group of mother and child; "Three Fishers" (23), a fine effect of evening light; "Tripping o'er the heather" (24), a particularly charming figure advancing lightly over a common; "The Farm Yard (35); "Raking the Meadows" (51) in which the two small figures admirably balance each other in the composition; "Glad Spring" (65) in which the bright figure and the bright landscape combine to express the feeling intended; and "Lost" (68) an almost pathetic group of two small "babes in the wood." The simple and unaffected grace of these little scenes, and the harmonious treatment of the colour, leave a very agreeable impression on the mind.

Mr. Pennell's Lithographs.

IN the same gallery are a series of lithograph sketches at the Alhambra by Mr. Pennell, the importance of which is vouched for by a letter from Mr. Whistler; and indeed it is pretty evident that Mr. Pennell is following the lead of Mr. Whistler in regard to this kind of work, and trying how rough a scrawl the public will be content to accept as a picture. In some, as the "Gate of the Alhambra" (16), "The Court of the Mosque" (22), and "The Hall of the Ambassadors" (32), there is a satisfactory sketch effect produced by few touches, but there are many young architects in London who can sketch buildings in this way quite as well or better; and some of the sketches, such as Nos. 18 and 21, are little better than scrawls. We remember that when Mr. Whistler exhibited his lithographic scribbles, Mr. Pennell was employed to write the preliminary puff in the catalogue, and to persuade the visitors that these were wonderful works; now the tables are turned; Mr. Pennell supplies the lithographs, and Mr. Whistler contributes the requisite puff. It must be a dull and shallow public that is influenced by this kind of thing.

Italian and Spanish Embroideries.

A COLLECTION of needle-work now on view at Messrs. Howell & James's, contains some fine specimens of ancient Italian and Spanish embroideries. There are a few upright panels of Spanish work, which have a fine bold design, though the colouring is rather harsh, and there is a mass of small ecclesiastic vestments which appear to be worth looking at; but it requires time and a certain amount of courage to attack piles of things which are scattered about in confusion, and if a collection of this kind is intended as an exhibition it should be catalogued, with the probable date of each piece. The notable things in the collection are two altar frontals, of ancient Italian work. The richest and most gorgeous of the two is quite unecclesiastical in design. A thick gold pattern, raised about half an inch from the foundation (which is also entirely covered with gold threads), covers the entire frontal; in the spaces of the pattern (which has not much to recommend it as design, though the execution is most beautiful) are embroidered flowers and birds in brilliant colours, and at regular intervals are heads which may almost be said to be in relief, and beautifully worked in delicate coloured silks. The other altar front is a genuine piece of church work. A white silk background, in the centre of which are three arches resting on columns; the arches and columns are of gold, the latter are worked with a rounded effect (a mistake in a decorative sense), and covered with a diaper. In the central arch is a black cross, on either side of which are Christ and the Virgin, the faces and hands painted on the silk, the garments elaborately worked in colours. There are vases of conventional flowers on each side of the arches, and a border of flowers.

* This, and the two following Notes, were held over from last week for want of space.

The Monuments to Balzac and De Musset.

IT seems to be still unknown when the long-promised monuments to Balzac and De Musset will ever really be erected in Paris. The delay is only attributable to the sculptors. The proposed monument to Alfred de Musset was the object of a public subscription as long as ten years ago, and two eminent sculptors, MM. Falguière and Mercié, were jointly commissioned to carry out the work, which was to be erected on the Place Saint Augustin; M. Mercié was to model the statue of the poet, and M. Falguière the figure of the Muse which was to group with it. A model was made and was accepted by the Municipal Fine Arts Committee, whose approval had to be formally obtained for the design, but the work has never been commenced—no one knows why; and the poet's tomb at Père Lachaise seems destined to remain only marked by the willow planted over it, in accordance with his own suggestion—

"Sa paleur m'en est douce et chère,
Et son ombre sera légère
A la terre où je dormirai."

The monument to Balzac seems to be in the same indefinite stage. The commission to execute it was offered to and eagerly accepted by M. Rodin, but since then the scheme has passed through all kinds of vicissitudes, caused by the delay of the artist to produce anything definite even in the way of a model. The subject is of interest to English as well as to French readers, for the works of Balzac and De Musset are as well known in this country as in their own, and the erection of monuments worthy of their fame would be applauded on both sides of the Channel.

THE MIDLAND BANK, MANCHESTER.—We have learned since our Manchester article of last week was published that the Midland Bank is not by Messrs. Heathcote & Rawle, to whom it was ascribed in the article, but by Messrs. Salomons & Ely, to whom we must apologise for the mistake.

THE ARCHITECTURAL ASSOCIATION:

ROOF COVERINGS.

THE second ordinary meeting of the present Session of this Association was held on Friday, the 6th inst., in the Meeting room of the Royal Institute of British Architects, Mr. A. Beresford Pite (President) in the chair.

The Chairman referred to the decease of the late Mr. W. H. White. As representing the Architectural Association he would say that they had invariably received the most cordial and hearty sympathy and support in all their work from the official Secretary of the Institute, and as a body they certainly had great cause to lament his loss. It was a very serious one to the Association, and, under the circumstances, he hoped the meeting would, in sympathetic silence, pass a vote of condolence to the Council and members of the Institute in the loss they had sustained.

Mr. B. F. Fletcher (Hon. Sec.), seconded the motion, which was agreed to.

The nominations of twenty-three gentlemen as members were next read, and the following were elected as members: viz., Messrs. E. A. Ould, W. L. Dowton, jun., J. G. Ross, D. H. Bentley, C. L. Brierley, C. H. T. Comyn, W. J. Davis, F. K. Weedon, C. W. Beaumont, C. M. Bevington, A. P. Brohier, R. H. Butterworth, W. C. Butterworth, P. B. Chatwin, T. Gray, B. Greig, E. Hale, F. L. Koelman, R. G. Pankhurst, P. Procter, F. A. Richards, N. Wilkins, A. A. Carder, T. Gregg, J. D. Hunter, F. M. Kirby, H. C. Norman, R. Spalding, J. B. W. Weaver, S. Wheeler, L. G. Detmar, C. N. Gage, C. L. Steele, W. J. Prichard, and E. L. Hall.

Several gifts to the Library were announced, and votes of thanks passed to the donors.

Mr. E. Howley Sim (Hon. Secretary) next proposed votes of thanks to the following ladies and gentlemen for services rendered in connexion with the Conversazione, viz.:—The Band of the Honourable Artillery Company, the Rainbow Amateur Mandoline and Guitar Society, the Proprietors of the *Builder* for lending the drawings of "The Cathedrals of England," the Exhibitors of the various tapestries, furniture, metal work, &c., the Entertainments Sub-Committee, and Mr. G. B. Carvill (Hon. Sec.).

The President seconded the votes of thanks, which were carried by acclamation.

The President then called upon Mr. J. Walker to read the following paper on "Tiles":—

If you take up any text-book devoted to building construction, or even to brick and tile making, you cannot but remark the smallness of space given to the subject of this paper; and in saying this, I wish you to bear in mind the limits under which I have worked in its preparation, more especially as the manufacture of tiles is no part of my theme, but rather the practical part as it would be likely to strike the operative tiler and the observant architect.

The chief value to me of a paper of this kind is that it brings into touch, for however short a space of time, the severely practical minds of operative and business men with those of the profession of architecture, in which each must, in the natural order of things, impart to and take something from the other, resembling, in this respect, the influence exercised by the Craft guilds of the mediæval times, an influence which the Architectural Association in its practice is doing so much to revive.

In dealing with tiles as a roof-covering, the first thing to be sure of is that you have selected a tile capable of excluding all dampness from your dwelling, and at the same time withstanding the disintegrating influence of the weather. These two characteristics go together, the one following the other as a natural consequence.

The characteristics of a good roofing tile are density combined with toughness and incipient vitrification, the last named quality producing, to some extent, that pleasing tint familiarly known as "bloom," one of the peculiarities of the Broseley tiles. Tiles of a bright red, or an earthy red colour, should be looked on with suspicion, and avoided. They are invariably absorbent, and will not "weather" well. To ascertain the comparative merits of tiles, as to their weathering properties, there is no better test than the amount of water they will take in.

Most roofing-tiles are slightly absorbent, unless you get the highly fired brindled and blue tiles; and for this reason old tiles have, in a few isolated instances, attained to a higher market value than new tiles, as by age and atmospheric deposit they have acquired an artificial surface coating, and lost the property of absorption—at least on their outer exposed surfaces, though I am inclined to

think that they have been desired more from an esthetical point of view than otherwise, as in the case of Colonel Makin's house in the Exhibition-road, South Kensington, built some sixteen years ago, and roofed with old tiles.

The old-fashioned tiles have no nibs or stubbs for hanging, and must therefore be kept *in situ* by means of two wooden pins or nails. In the old days the oak pins, by reason of their unyielding hardness, were a fruitful source of breakage when driving them through the sometimes badly-formed pin-holes at the ends of the tiles. Still, as far as absorption goes, the best kind of modern tiles are capable of excluding all dampness from your dwelling if they be laid with due regard to other conditons, with which I now propose to deal.

Where tiles are bedded in lime-and-hair mortar the tops only should be bedded, the mortar extending, say, not more than 1 in. below the head of the tile. If brought too low it may become a source of dampness in exposed situations, by reason of its capillary attraction. As a matter of personal opinion and experience, I would slightly gauge with Portland cement all lime and hair used in the bedding of roof-tiles, the additional cost being very small.

Where your roof is close boarded (and sometimes felted) there is no need for bedding, though, of course, a covering of bedded tiles is less liable to breakage in climbing about a roof than would be one of unbedded tiles. By gauging the lime-and-hair mortar you make it practically non-absorbent, and therefore less likely to attract and take up moisture.

Secret gutters at dormer cheeks and elsewhere often become a source of dampness as a consequence of the tiler thoughlessly beating down the plumbers' lead welt or turn over, purposely formed to check or keep back the rain, that his tiles may lie more evenly and in the same plane as the general inclination or slope of the roof. Sometimes the battens, both in slating and tiling, are wrongly carried over the lead welt and nailed through it, in which case you are very likely to get water into your roof.

The lead welt should stand its own thickness above the backs of the battens, forming a tilt for the tiles, so as to throw the water away from their edge on to the main body of the roof—the secret gutter performing its proper function by receiving and carrying off the water from the dormer itself, or from any gutter discharging immediately above it. The tiles overhanging secret gutters 1¼ in. should not be bedded on the lead, nor their edges pointed. In some cases where this has been done I have found rain drawn into the roof. Tiles, and tile-and-half, should be worked against all secret and other gutters, where practicable, alternately on each course.

Secret gutters should be in such positions where they will always clear themselves; especially where the dwelling is surrounded with trees. I have heard of such gutters becoming partly silted up by accumulated atmospheric deposit, and inducing leakage by capillary attraction.

A case in point occurred at an artist's studio, Tite-street, Chelsea, where a secret lead gutter had been formed *under* the tiles intersecting at the re-entrant angle of the roof. Repeated rains had partially silted up the space between the lead gutter and the underside of the tiles, which had been cut close, leaving no space between their opposite edges, with the consequence that a narrow film of water was upheld in the space remaining between the lead and tiles, resulting in an abundant leakage in heavy rains.

Such gutters should have, at least, a clear space of 1½ in. between the opposite edges of the tiles on each slope or plane whose intersection forms the re-entrant angle of the roof.

Where the roof runs into a vertical plane or parapet wall, 4 lb. lead-soakers, finished with a skeleton flashing, is always a safe arrangement, though they give the tiling an untidy appearance by preventing the tails of the tiles lying close on the backs of the tiles immediately beneath them. Where a wall cuts obliquely into a roof, this arrangement is indispensable.

Stepped flashings, with the lead extending 6 in. on the roof, should not be used, because of the necessity of distressing the lead to fit the backs and steps of the tiles, and the likelihood of breaking the tiles in the act of so doing.

In a tiled roof, valley and hip tiles should be used in preference to lead gutters, secret or otherwise, bedding the valley tiles at their heads to keep them *in situ* and steady while laying the plain tiles; but laying the hip tiles dry, keeping them in position by a single nail at their head.

Hip and valley tiles should not be ordered without proper regard to their enclosed angle or pitch, as they often appear to be, judging by the appearance they make on many roofs in our midst. The dihedral angle made by any two adjacent sides of the roof, intersecting at and forming the hip, should be geometrically obtained (for one cannot wait till the roof is framed before ordering the tiles), and the hip-tiles ordered, with a pitch of 10 deg. greater than the roof, to allow for the tilt and the thickness of the tile under them.

The method of obtaining the dihedral angle is shown on page 97, fourth edition, of my manual on "Brickwork."

The enclosed angle of the valley-tile is obtained in the same way, but reversed. The hip and valley-tiles, in my opinion, should be in the same inclined planes of the roof of which they form a part, though more frequently than otherwise they are not so.

There is one thing in connexion with the subject of this paper I would like to especially impress upon architects — the desirability of making the roofs of dormers and gables, springing from and intersecting the main roof, of the same pitch or inclination as the roof, their intersections with which form the valleys. If this is not done, purpose-made valley-tiles must be obtained, for all hips and valleys stocked by tile-makers are for roofs whose sides have an equal pitch; or else lead gutters must be resorted to.

If the ordinary stock valley-tile be used, it will be found that the line forming the tails of the plain-tiles in each course will fall either below or above the bottom of the valley-tile in each case on *one* side of the roof; and so unsightly and distressing is the result, that in one instance I found it necessary to paint the vallies into straight lines that the correct sense of the eye might not be annoyed by looking at them. The practical way of dealing with roofs whose sides have unequal pitches is also shown in the manual already mentioned.

In the case of a complicated roof, I have known a miniature model to be made of the complete roof, and sent to the tile-maker for his guidance.

Where a minor roof runs in at right angles to a greater, or main roof, intersecting it at a point below the main ridge, it is desirable to use a piece of 4-lb. lead dressed to the shape of the minor ridge, and the slope of the main roof, and called a saddle-piece. This, placed over the tiles on the lower roof and under the tiles of the main, or higher roof, prevents the possibility of rain getting in at the junction of the roofs; and the lead can be of such an area as to be covered by the ridge-tile, the appearance of lead in a tiled roof being objectionable wherever it can be avoided.

The verge should start with *straight* tiles running from the eaves to the ridge (unless interrupted by a chimney-stack) and be bedded on the outside 4½-in. of the brickwork—the battens being cut back 4½-in. for that purpose. The outside brickwork should be cut up to the rake of the roof and nearly flush with the back of the hanging battens, that the verge, when completed, will have a tilt on its outer edge of at least ½-in. to throw the rain on to the body of the roof, and so avoid rain drippings from the verge.

The tiles to be used on the verge should be soaked to saturation and allowed afterwards to drain, and then bedded in Portland cement, as by reason of the battens being kept back 4½-in. from the face of the brickwork there is fixing for one nail only (or stubb) for each tile. The verge generally projects from 2 in. to 2½ in. beyond the finished face of the wall, and is finished either with a plain or angular fillet at its junction with the brickwork. The roof-tiles on the verge should be alternately tile and tile-and-a-half (gable-tile), in its line of direction, and the same remarks apply to the cutting up to hips and vallies; small strips of tiles being undesirable where they can be practicably avoided.

The under-eaves tile is seldom used in practice in the way intended by the tile-maker. The tiler simply knocks off the two stubbs or hanging nibs and beds them on their backs, the reverse way intended, for the purpose of getting the under-eaves edge close fitting to the eaves-tile bedded immediately on it, the under-eaves being twiced nailed, in addition to the security of position obtained by the tilt or spring of the roof.

Ridge tiles should be of such a section as to admit of being pressed or made in one piece. Where an ornamental cresting is required, it should be made as a separate piece entirely detached from the ridge tile proper, the latter being made with a groove to receive the cresting, as shown in vol. ii., "Rivington's Notes on Building Construction." Under no conditions should the cresting be stuck on the ridge tile by means of semi-liquid clay while they are in the clay state. Such work is more or less defective and unsatisfactory in the end.

The simplest form of ridge tile, and therefore the best, is that used by the London School Board, consisting of the two wings terminating in a roll at their angle of intersection. Another good form of ridge tile is that of a plain vertical blade rising from the angle of intersection of the wings, and with the square angle at each end of the blade cut off at an angle of 45 deg.; and which can be pressed in one piece by a simple operation. The weakness of this form of tile is at the junction of the crest with the wings, where it is apt to get broken in transit or careless handling.

Ridge-tiles should be well soaked before use, bedded in gauged lime-and-hair and their vertical joints drawn up solid with cement, not simply pointed after they are fixed. The use of dowels I consider altogether unnecessary where this is done. A tile 9 inches in length is made specially for the last course of plain-tiles coming immediately under the ridge-tiles.

Where the roof is enclosed on the underside it is customary to bed in lime-and-hair the eaves-courses only, for the sake of steadiness in the fixing. In one instance I have seen the rafters pugged (in the same way that you would pug a floor) by nailing a fillet on each side of the rafters, about central in their depth, and then lathing between the rafters, and plastering the same from above with mortar and chopped hay, the rafters being afterwards open-battened to receive the tiles.

In another instance I have known the tiles to be laid on open battens and bedded in straw, the architect claiming that the straw prevented the incoming of snow, and did not prevent the air getting at the roof-timbers for their preservation.

Well-formed roofing tiles are straight in their width and hollow in their length, that the tails of each course may lie close and tight on the backs of the undercourse. Straight tiles will not clear themselves one over the other, and should therefore be rejected. Where pointing is necessary—on the verges, for instance—it is customary in good work to grind down some of the broken tiles to mix with the Portland cement as a substitute for sand, that the finished pointing may approximate in colour to the general tone of the roof-covering.

In the case of vertical tiling, it was customary to hang and nail the tiles on battens fixed to a brick-nogged, or to an ordinary 9-in. wall. I am told this is not now permissible. Under these circumstances, it seems to me that the proper alternative is the use of Wright's patent fireproof bricks—or bricks somewhat similar—which are capable of being nailed into, by the use of which the 2-in. by ¾-in. hanging battens may be dispensed with, the tiles being nailed into the bricks, and the tilt obtained by one or two sailing-out courses at the level where the vertical tiling commences.

There is much that might be added; but what is omitted can be found in the text-books. The Architectural Association has fixed a time-limit of fifteen minutes; and, when conferring this honour upon me, gave me to understand that a practical paper would be required. With that instruction in view I have refrained from going to the text-books—except in one instance only, and that to refer you to an illustration—but have drawn upon my own personal knowledge and experience. How far I have succeeded in my attempt to carry out your behest is, for my audience to determine."

Mr. T. Stirling, jun., then read the following paper on "Slating":—

"Before proceeding with the practical part of my paper, I propose giving a short description of the formation of slate, and of the sources whence it is obtained.

The period of the formation of slate was a very early one, and belongs to the Cambrian and Silurian eras, that found in Wales being of an earlier date than the upheaval of the Alps.

Slate is one of the primary rocks, and was originally composed of clay diffused amongst the ingredients of granite, forming what are known locally as veins.

Slate has assumed its present form by volcanic action, the fine grain and closeness of the texture varying with the amount of pressure brought to bear on it, the nearer the heart of the mountain the better the slate.

This action probably took place before the clay had hardened.

In this country, and I believe in others, these veins run in the same direction, usually from south-west to north-east; they are not found to exist anywhere north of the carboniferous line. The largest vein existing in this country is the

one known as the Bangor and Carnarvon; this runs, with little interruption, from the Penrhyn Quarry, through Llanberis, to the Nantte valley, where most of the Carnarvon quarries are situated.

Another well-known vein is the Festiniog, better known as Port Madoc; also a smaller one in the Corris valley, in the Aberdovey district, and another in Cornwall, in the vicinity of Delabole.

These produce slates usually sold in regular sizes, from 24 in. by 12 in. downwards.

The output from the districts mentioned in North Wales amounts to about 35,000 tons per month, and may be divided as follows:—Penrhyn, 9,000 tons; Dinorwic, 8,500; Carnarvon district combined, 6,000; Festiniog, 9,000; and various isolated quarries combined turn out some 2,500 tons.

Unfortunately, at the present time there is a strike at the Penrhyn quarry, which has entirely cut off about one-fourth of the whole supply of North Wales, which in the present state of the trade is a very serious matter. Some 3,000 men have left the quarry, and both sides have adopted a firm front. There seems little chance of an immediate settlement, and many of these men are scattered over the neighbouring district.

Stocks amongst merchants are generally low, and from personal observation I am able to state that the quarries have none. There is at the present time, and has been for some time past, a much greater demand than there is any possibility of supplying.

The fact that a large number of the Penrhyn men have obtained employment elsewhere does not point to much increase in the production of the other quarries, as they have been in full work for some time, and the additional hands at their disposal are mainly occupied in opening fresh parts, which will not affect the market for some time, probably not this year.

Other sources of supply of regular-sized slates are widely apart, the largest regular one being Alsace. A large quantity of red, green, and blue are being sent over. The red slates are similar in colour to those found in the Bangor and Carnarvon veins, and are probably the best foreign slates at present obtained. The green is well known under several names:—Permanent, Sedan, German, Belgian, and Imperial, and is the cheapest green slate in the market. They cannot altogether be recommended for London use, as they contain a large number of specks of iron pyrites, which, after a time, oxidise and break up the surface of the slate.

The blue slates are not equal to Port Madoc, being soft and porous, but they harden with exposure.

A fair number of dark blue slates are now sent from France; they are very thin, and not to be compared with Welsh slates of similar colour. I have no experience of their durability in London or, in fact, in this country.

America is the remaining source of supply, but from what we hear, this is not likely to remain steady. They are now sending a large quantity, but this is only the surplus and old stocks which have accumulated for some time. At present they find a market readily, principally amongst small merchants and builders. Generally, the larger merchants pin their faith to the Welsh slates, and, as long as they are supported by Wales, will not purchase these largely, if at all.

Some of the slates they send are good, and very similar to medium Port Madoc, and it is difficult to tell the difference. They come in various sizes, and at present are cheap.

Green slates are obtained from America; the best known being the Eureka, which is the best cheap green slate in the market, and has been used for some twenty years in this country.

Lately another American green slate, of similar colour, has been introduced, and used in some of the London County Council buildings, the New Offices of the Works Department in Belvedere-road, Lambeth, being covered with them, where they have been on the roof five or six months. I am unable to speak further as to their durability or their powers of retaining their colour.

I have dealt with the supply of all regular-sized slate, and will now move on to the Westmoreland and Cumberland quarries.

These quarries are situated principally in the Langdale and Coniston districts. Others are found in Honister Pass, near Buttermere, and at Kirkby-in-Furness; the latter belong to the Duke of Devonshire, and are worked by the Burlington Slate Company. The slates are of a dark blue colour, and very hard and durable. My father is of opinion that they are the best slates he ever used, and his experience is based on those used on the Manchester Town Hall and the Natural History Museum, London. They were also selected for the Houses of Parliament, and my grandfather delivered some 400 tons on the site, but before the building was ready for the roof iron was substituted.

A good effect is produced by working in a light green slate, such as Elterwater, in bands or pattern, in the manner done at the Natural History Museum.

Slates from Cumberland and Westmoreland are, as a rule, obtained in random sizes, and vary much in colour, size, and thickness. Generally, the colours of best and seconds are similar, especially in Elterwater and Newtons, where only one colour is worked; but in some of the quarries where two or three shades are found they are not very carefully sorted; the result is that a slightly speckled effect is produced when close to, but viewed from a distance this is not noticeable.

One instance in which this effect has been purposely worked is the house erected for Mr. Beit in Park-lane. Buttermere thirds were used here, and a mixture of light green, dark green, and deep olive green is seen.

The average weight of Westmoreland slating is as follows:—

Best slates about $\frac{3}{8}$ in. thick, when laid, about 8 cwt. per square. Seconds slates about $\frac{1}{2}$ in. thick, when laid, about 10 cwt. per square. Thirds slates about $\frac{3}{4}$ in. to 1 in. thick, when laid, about 20 cwt. per square. Bangor or Port Madoc slating is about 5 cwt. per square.

There is little difference in the cost of best and seconds Westmoreland slating; the slates are sold by the ton, and this will always ensure good substance. The expenses are very heavy, amounting in London to about 22s. per ton, and as the covering capacity of the seconds is nearly one-third less, heavy carriage makes them nearly as expensive as the best delivered on the site. In addition to this, the labour is more expensive, and the slates being usually smaller require more nails per square.

A few of the quarries supply slates cut to regular sizes, specially to order, and at a considerably increased price, which makes the work rather expensive. Westmoreland slates used in this way lose much of their characteristic effect, and, in my opinion, do not look worth the extra cost above an ordinary green regular-sized slate.

The chief features of Westmoreland slating are, I think, as follows:—First, the colour at a distance; second, the rough and broken effect close to; and third, and not least, the courses diminishing gradually from the eaves to the ridge. As a rule, the bottom one should show about 12 in., and, if the roof is not very deep, should diminish about $\frac{1}{2}$ in. a course; if the roof is a deep one, the courses should diminish more gradually than that. I am unable to say what the total output from the Cumberland and Westmoreland district amounts to, but do not think it exceeds one-fourth of the North Wales district.

Before leaving the sources of production I should like to mention the Whitland Abbey Quarries at Clynderwen, South Wales. This is a slate which, when laid, is of a light green colour, but turns with exposure to a golden hue. It is a brittle slate, and should not be used where there is any vibration, as they are liable to split from nail-hole to nail-hole; being cross-grained, the bottom part of the slate then falls down. They are supplied both in regular and random sizes, and the latter, in my opinion, make the better work.

I will now deal with some of the slates I am exhibiting. The slates entitled to the term best Bangor are those produced at Penrhyn and Dinorwic Quarries. Unfortunately, few of the best slates from either of these come to London. It has been difficult to obtain these for some time, the reason being that during the times when trade was bad and prices low the demand for best slates ran down, and left the quarries with heavy stocks. After a time purchasers were found in Germany, and a large proportion of best slates are exported there and the quarry owners will not deprive the Germans of the slates they took from them in bad times. This is particularly the case in the best red slates, which are second to none in Wales. The supply is small compared with other qualities, and it is difficult to see how the export to Germany can be stopped under the circumstances mentioned.

One reason for the loss of the red slates may be that specifications generally used to read, "Best Blue Bangor;" this naturally, to some extent, shut out the red slate.

Some very good slates are now being produced at the Dinorwic Quarry in large and increasing quantities, viz., the seconds new quarry and best mottled; the first-named are not easily obtained owing to the great demand for them in the North of England and Scotland. In Scotland they take all the small sizes, in fact, anything under 16 in. by 8 in. in the second and third qualities; and this custom has almost worked down to a hard and fast rule, which is seldom broken; viz., seconds and thirds below 16 in. by 8 in. to Scotland; seconds of all sizes and qualities to North of England, and best and second best of all qualities but best red to the Midlands, London, and South of England.

For London use, where appearance is a secondary object, I cannot suggest better slates than the best tons and best mottled. The best tons are capital slates for church roofs. They are laid in slightly diminishing courses, and show about 15 in. at the eaves, and reduce to about 9 in. at the ridge. They are of a bluish-grey colour, with a tinge of green.

The best mottled are so called from the splashes of green in them, and are similar in colour and quality to the best tons, but are somewhat thinner and are supplied in regular sizes.

The quarries find great difficulty at the present time in supplying large quantities of any particular size; they are unable during the present demand to produce them, and if the term "Countess" (20 in. by 10 in.) were rigidly enforced in all cases, the value would rise to something approaching 50s. per square, as merchants would be compelled to reduce larger-sized slates to meet the demand.

As a matter of experience, actual size has little to do with the quality of the work. If any preference is to be given, 16 in. by 10 in. is probably the best-sized slate of any. For very sharp-pitched roofs and curb work I recommend 16 in. by 8 in., or 16 in. by 9 in.; these slates are lighter and do not hang so heavily on the nails, and having more nailing in proportion to the larger sizes, lay firmer.

For flatter pitches, the wider the slate, if of good quality, the better. In a slate 12 in. wide you have quite $4\frac{1}{2}$ in. clear from the joint of the slate above to the nail hole; whereas in a 10 in. slate you only have $3\frac{1}{2}$ in. For medium-pitched roofs, slates sized 16 in. by 12 in., 18 in. by 12 in., and 20 in. by 12 in., make good work. The neatest sized slate I know of is 18 in. by 9 in., and for a roof of 105 deg. this will make good and very neat work.

While on the question of sizes, fifty to sixty years ago there were only three regular-sized slates made, and this was then considered as a great concession on the part of the quarry owners, who, until that time, used to send the material up in the rough; this will account for all buildings of seventy or eighty years' standing being covered with random slates, and some fully 1 in. thick. The three sizes then introduced were 24 in. by 12 in., 20 in. by 10 in., and 16 in. by 8 in.; these were gradually extended till we have now some fifteen between 24 in. by 14 in. and 16 in. by 8 in.

A fact worth noting is that the rougher the slate the less chance of any leakage through rain blowing over the lap; this is accounted for by the greater quantity of air between rough slates than between smooth ones. In proof of this, try and separate slates that have been piled on top of one another after a day's rain. You will find that the moisture has worked in between the slates and excluded the air, and that considerable force is required to separate them. The same action takes place on a roof where the slates fit closely on top of each other; the moisture gathers and finally spreads over the lap or finds a vent through the nail hole. In the slates used largely in Devonshire and Cornwall this is very liable to occur. They are very smooth, and the rain there is more like mist, and quickly finds an inlet, so much so that in most cases the slates are bedded solid in putty. Formerly they were bedded in lime and hair, but that is worse than none at all. It simply acts as a sponge, soaks the damp in, and although it prevents leakage in any quantity, keeps the whole roof damp, and in course of time rots the woodwork. The action of the lime in time destroys the slates.

The most effective way of dealing with this trouble by means of cement or compositions of that nature is torching; but this is not an entirely satisfactory job, as any vibration in the roof is liable to break the joint, which of necessity is a very fine one; torching can only be done on battened roofs where there is no boarding. The above remarks apply to nearly, if not all, slates of a smooth surface.

Little remains to be said about the other specimens from North Wales that is not covered by the foregoing remarks.

The Carnarvon slates are, as far as durability is concerned, much the same as Bangor, as they are of nearly the same vein. They are rather more brittle, but when once secured on the roof, and all traffic over them has ceased, generally make good work.

The Port Madoc of Festiniog slate is perhaps the best vein existing. The slates can be split thinner, which, in my opinion, is rather against them than otherwise, as the men vie with each other in getting the greatest number of slates out of a given quantity of rock.

The slate from this district is of a better cleavage than any other. The following facts prove this :—In the two principal quarries in this district it takes about twelve to thirteen tons of rock to make one ton of marketable slates, which compares favourably with Penrhyn and Dinorwic ; in the latter quarry the waste is about 16 to 1, and in the former about 17 to 1.

When at Port Madoc I was informed that London and England generally were not favoured with the best slates—by this they mean that the thinnest of the best slates are carefully sorted out and exported to Germany, where they receive prices for them in advance of those demanded in this country.

The quarries in the Festiniog district are usually worked on the mine principle. Those of which I have experience are gallery and chamber quarries, and run right into the heart of the mountain. They are worked from five or six levels, and the rock between each chamber has to be left to support the mountain. The chambers are about 50 ft. wide, and work down to each other from level to level in steps. The pillars of rock dividing these are some 45 yards thick. By this means of quarrying they follow the good veins and leave a great part of the bad rock, and this partly accounts for the small quantity of waste compared with the quarries worked on the open system ; but, on the other hand, the cost of mining is greater than the ordinary method of quarrying.

The loss of so much good rock has caused the Oakley Quarry to consider the advisability of opening the face of the mountain, and working both ways. The cost of this will be great, I hear, approaching 750,000*l.*, before they can obtain any considerable supply.

In conclusion to my remarks *re* the North Wales district, the supply remains practically inexhaustible. The Penrhyn Quarry has been in full swing since the time of Queen Elizabeth, and the Dinorwic for some hundreds of years. The workings were originally some six miles apart, and they are now nearly five ; so there is no prospect of their joining for the next thousand years. To do this they will have to remove two mountains each over 2,000 ft. high, and form a cutting one mile and a half wide.

I have brought a collection of photos of two principal quarries, and if you will bear in mind when looking at them the fact that they extend one mile and a half across the base of the workings, and that each step is from 60 ft. to 70 ft. high, you will form some idea of the magnitude of these quarries, coupled with the fact that they have to deal with over 3,000,000 tons of rock in the course of one year's full work.

The Delabole Quarry is a huge pit sunk some 300 ft. into the rock. This has been at work about the same time as the Penrhyn, and possibly longer.

The slates obtained from this quarry are of a dark olive green colour, and are at first brittle and soft, but harden with exposure, and are a very durable slate.

In course of time they turn a lighter colour. These slates are of a peculiar grain, and this makes me think that the randoms which are used locally make the best work. The supply is not large, and they are unable to do much more than satisfy the requirements of the two or three adjacent counties. Hitherto their isolated position has kept their material out of the London market, but the South-Western Railway now run their traffic through Delabole, which places them in a much more favourable position.

There are several other quarries in the neighbourhood, but they have been allowed to go out of work, and it will be difficult to resume operations in many of them, as they are nearly full of water.

The slates shown from the Westmoreland and Cumberland districts are fairly representative of the various kinds, and make the most picturesque roof covering of any kind of slate, and this, combined with their extreme durability and the necessity of having men specially trained to use them, as a rule ensures good work.

Slating is usually laid piece work, but in this particular class of work we do not make this arrangement, as much for our own benefit as that of our customers. The slater has more work in sorting, trimming, and holing the slates than in the actual laying, and it is necessary for him to set out the whole side of a roof on a rod in the various courses before he can lay a single slate.

This frequently causes delay, especially where the builder has been late in giving the order. This is particularly the case where very deep slopes have to be covered, such as church roofs ; nearly all the slates must be sorted before the slater can give the gauge, otherwise it is not possible to obtain regularly diminishing courses. To sort the slates properly, a good deal of space is required, and in large City jobs we are often in conflict with the builders over the space taken up.

In using slates of random widths it is, of course, impossible to lay the slates with the joints lining vertically ; if this were done much of the characteristic appearance would be taken away, and the effect little better than in ordinary cheap green slates, and the extra substance would be the only advantage.

Nails used in this kind of slating are very much stronger than those required in ordinary slating ; they should be of the following numbers to the lb. : 2 in., 90=1 lb. ; 1¾ in., 100=1 lb. ; and 1½ in., if any are used, 130=1 lb. I have sample lots of the nails I recommend for this class of work, and which we invariably use. I should mention that it is impossible to use these heavy nails with thin slates ; the spall made in ordinary slates when holing is not large or deep enough to take the extra heavy heads, which, if they are not properly recessed into the slate, have a great tendency to break the slate laid over them, and if it does not do that, prevents the slates from laying properly.

We have had at various times considerable trouble in remote country places when using Westmorland slates ; they seem to frighten the country slaters. Certainly they do not appear to advantage when roughly stacked up, and the inexperienced eye of the local slater, whose occupation is usually of a composite character, and who is probably a better authority on rough plastering, pan tiling, painting, and bricklaying, &c., cannot see how a sound job can be made.

To such an extent does this feeling exist that they have, in most cases, succeeded in thoroughly upsetting the proprietor ; it is, however, surprising to find how their mind alters during the progress of the job. I cannot recall a single instance where we have had to return to remedy any defect in Westmoreland slating beyond the repairs inevitable before the various trades have finished.

At a job lately finished in the West of England we had to follow the local practice to some extent. The building is situated on the seashore, and in a very exposed place. Our man had instructions to take any precaution he considered necessary to make the job perfect, and, finding the rain during storms driving at an angle approaching 180 deg., he thought it as well to use putty in a different form. He put two rolls of putty in the form of an arrowhead, the point about 2 in. above the nail hole and extending downwards to about 2½ in. below. This will make it impossible for any driving rain to blow in, and is quite as effective as solid bedding, and if the job had been covered in the early summer the oil from the putty would not stain the slates, as it certainly would if the slates had been bedded solid and a strong sun pouring down on them.

The above-mentioned precaution may be advisable where severe storms are frequent, but in places away from the sea, if the roofs are boarded, felted, and battened, I should suggest the addition of vertical battens if the situation is very exposed, say on the top of Hind Head. This course will be quite effective, as any moisture that may be blown over the lap will disperse, and quickly dry up, before it has time to do any damage, whereas if the roofs are battened in the usual way, there is a stoppage : the batten prevents the moisture dispersing, and the leakage will in course of time become serious. In addition, the current of air keeps the roof very cool during the summer months, and also preserves the slates, which, if cut off from ventilation, are subject in course of years to dry rot, which takes place particularly where slates have been laid in felt on boarding only, reducing the parts of the slates not exposed to the atmosphere to a powder.

I am certainly of opinion that if Westmoreland and other random-sized slates are used by competent men, that a sounder, better, and more durable roof is the result. Unfortunately, the roof originally specified to be covered with good slates is the first thing to be cut down in cost, if circumstances demand a reduction. I note a growing demand for thicker slates, and shall do my best to foster it. Slates are, as a rule, much too thin, but I venture to think that some of the samples shown here to-night will fulfil your requirements, and I shall be only too pleased to give any further information about them.

One point I should like to touch on is the covering of domes. We can make a good and effective job by using small slates, 8 in. long. On a small scale this has been done lately at the Royal Observatory, Greenwich, with good effect. I do not think it possible that ornamental work, except in variation of colour, could be worked, owing to the gradual tapering of the slates used as the summit is approached.

For a good example of slating in a variety of colours I would refer you to the main building of the Oxford University Museum ; the additions have been done since, but a great deal of trouble was taken by the architect, Sir John Dean, to have his idea carried out, and each section was carried up to the ridge temporarily, and any alterations made that suggested themselves, till the effect desired was obtained.

I fear I shall be going from my subject if I touch on slate slab roofs, and I will not do more than refer you to two or three instances :—Front of Camberwell Church covered with Delabole slabs and roll ; Herbert Hospital, Woolwich Common, covered with blue Welsh slabs ; Sun Fire Office, Threadneedle-street ; Registry Office, Edinburgh, covered with Bangor slabs.

I think we slaters have one grievance, or at all events something that remains an eyesore to those that take an interest in their work in after years, and that is the ugly stains made by the drainage of lead flats down green slates. This is very noticeable at the new Admiralty Buildings in St. James's Park, and has partly spoilt the effect of the green slates on the roof there.

I have brought some samples of rock that may, in course of time, be introduced later in the form of building stone. We cannot always expect to cheat the tiler and suggest that this may be a happy arrangement—green walls and red roof and *vice-versâ*."

A paper was also read by Mr. G. Ewart on "Lead, Copper, and Zinc," but this, and a report of the discussion which followed, we are compelled to hold over until next week.

ART AND LIFE.

THIS was the title of a lecture delivered by Mr. T. J. Cobden-Sanderson on Thursday last week before the Arts and Crafts Exhibition Society, in the New Gallery, Regent-street.

The lecturer commenced his address by a brief but appreciative reference to the late Mr. William Morris, and in explaining that the lecture that night was the first of a series which had been arranged by the Society, he said that the object they had in view was the extension of the conception of art, and more specifically the application of the idea of beauty, as well as of utility, to the organisation and decoration of our greater cities. He desired to extend the conception of art and to apply it to life as a whole, or inversely to make the whole of life in all its grandeur, as well as in all its delightful detail, an object for the application of art. Art had its origin, or perhaps its opportunity, in craft, and craft in the needs of life, and as the needs of life varied from generation to generation, and age to age, so must the objects of craft. He proposed to consider the objects of craft in a highly civilized community, and to see how far and in what way they offered opportunity to the artistic spirit to manifest itself. At the same time it might be well to consider how art had manifested itself in an ancient civilisation—which, in so many ways, was still the prototype, as it was the basis, of our own. The lecturer then quoted largely from Homer to show how in ancient days art made idyllic even the most prosaic occupations, and he contrasted the conditions of work of past times with the tendencies of to-day, his object being to show what industry might be—how beautiful in itself and in its implements. He did not desire to make the contrast at the expense of the present, nor did he say that to be happy we must revert to earlier conditions. That was not his conception of the function of art, or of its future. Art was, or should be, life. Art as a great function of human imagination implied a certain lofty environment, and was itself an adjustment to that environment of all that could be done by mankind within it. The future of art was the imaginative animation of the universe—of a universe otherwise inanimate and unself-conscious. What was the immediate function and future of art? It was, as far as might

be, to do each right thing, however small or however great, in the spirit of an artist. Art was not decoration, painting, sculpture, architecture, music, or verse, but it was all those things in turn. The immediate future of art was to apply that idea to the whole of life and not to the objects only of the so-called fine or minor arts. The lecturer then referred to the possibility of ennobling all departments of life by art, such as agriculture and commerce, for instance. In this respect he advocated the establishment by the State of schools of husbandry, in which the labourers might not only be taught to understand their work, but to love it for its own sake. He was glad that School Boards and public schools were beginning to get some hold of this idea. But it was not enough that the buildings which were erected should be beautiful, for, in the teaching given, the principle should never be lost sight of that the highest result of learning was to render life beautiful. Death, moreover, should be represented as the principle of new life and of unending progress. Life was stupendous energy, and that energy as a whole must be within the province of art, and must be controlled and directed by it. To what end? To the end defined by their late President long ago: work, and in work the realisation of the fit, the seemly, and the beautiful.

MAGAZINES AND REVIEWS.*

THE Christmas number of the *Art Annual*, uniform with the *Art Journal*, is already out, and consists of a monograph on the works of Mr. Marcus Stone, R.A., a critical essay which will rather tend to dispel the idea that this artist is a mere painter of pretty and rather superficial pictures. The rather conventional character of his colouring in his finished paintings is against his work being taken very seriously, and its higher qualities perhaps become more prominent in the numerous black and white illustrations with which the monograph is adorned. It is rendered apparent, at all events, that Mr. Stone is a very serious artist in his method of work, and that the pretty scenes of various stages in love-making by which he has been principally known lately represent a great deal of thought and study, though no doubt there is a certain degree of repetition in the subjects and figures. The sketches symbolising "March" and "November," drawn at the age of eleven, are sufficient evidence of his natural and even precocious talent. It is a pity that he did not execute more such works as "Watt discovering the condensation of steam," which is illustrated here; a picture with much more thought and energy of expression than is found in his more popular love-scenes.

In the *Art Journal* itself the Rector of Clovelly writes an article on that place, with, among other illustrations, an excellent sketch by Mr. F. W. Sturge of "Clovelly from Hobby Drive." But how is it that the Rector has nothing to say about his church, which, internally at least, has some interesting and unusual features of detail, if we remember right? In an appreciative article on "The Fifth Exhibition of the Arts and Crafts" Mr. Lewis F. Day urges that the managers of the exhibition should keep strictly to their programme of illustrating forms of art which picture exhibitions do not illustrate; the introduction of the drawings and other works of Madox Brown being apparently a slight step in the direction of pictorial exhibition, of which there is enough elsewhere. An article on "An Italian Sculptor," Signor Bistolfi, introduces us to the work of an artist of original power who is little known in England. In an article on "Some Gold, Silver, and Coppersmiths" Mr. Fred. Miller gives descriptions and illustrations of some good recent work, but in referring to one of the artists as originally a pupil of "Mr. J. D. Seddon, the well known architect," he makes a confusion which we have met with before in print between the rather similar-sounding names of two different architects. There is (or was) "Mr. J. D. Sedding," who unhappily is dead, and "Mr. J. P. Seddon," who is living, and whose name ought to be much more widely known if the public had done justice to his abilities.

Among the always interesting but rather multifarious contents of *The Artist* we notice some specimens of architectural sketching in pen line by Mr. Percy Wadham, of Windsor, which are exceptionally good. An illustration of "Queen Elizabeth's Hornbook," with its richly decorated back, shows us a fine and interesting piece of old decorative work.

The *Engineering Magazine* contains an architectural article of considerable interest by Mr. J. Beverley Robinson on "The Cantilever in Architecture," using the word in its constructional sense, but as associated with design. There is a good deal in the article that is original and suggestive. Other articles of more specially scientific interest in the same number are on "The Use of Electric Power in Small Units," on "The Importance and Economy of Pavement Construction," in which the author, Mr. Whinery, specially emphasises the necessity and economy of careful and bit-by-bit maintenance; and "Gas *v.* Electricity for Power Transmission," by Mr. N. W. Perry.

Scribner devotes its usual short article on "The Field of Art" to a notice of various Art Associations and Schools of Art in the United States, with small illustrations of the seals or badges of these Institutions, some of which are in themselves happily indicative of the refined artistic spirit which has been developed of late years among the American people. The article gives an idea that there is a great activity in regard to Schools of Art study in the States now, though one, the Brooklyn Art Association, after erecting a fine building, failed and had to close in 1886 Ten years make a good deal of difference, however, in a country in such a rapid state of artistic progress, and possibly another attempt would be a success.

In the *Century* is an article of considerable interest written by the French artist, M. Boutet de Monvel, on the subject of Joan of Arc, whose history he has made a special study, and accompanied by reproductions of some of his very original and delicate designs for the illustration of scenes in her life. These are partially decorative in character, and are startlingly unlike anything one has seen before in the way of Joan of Arc illustrations, but they are remarkable attempts to realise details of character and costume of the period.

The *Nineteenth Century* contains an article by Mr. and Mrs. Sidney Webb (one does not see exactly how the joint authorship is arranged) on "Arbitration in Labour Disputes." The main point of the article appears to be that arbitration is an unsatisfactory remedy because it is not legally binding, and has no force but in the sense of honour of the two parties who have agreed to accept the arbitrator's award. Arbitration may however be made compulsory. "It may well be argued that the community, for the protection of the public welfare, is entitled to step in and decide the terms upon which mechanics shall labour, and upon which capitalists shall engage them." Here, the writers are good enough to explain, "we pass outside the domain of arbitration proper." We should rather think so. It is simply the old foolish fallacy of State-regulated wages put in slightly different wording. It is somewhat astonishing that such nonsense should find admission at all into the pages of a magazine which has any reputation to keep up. The *Nineteenth* contains also an excellent short article by Mr. S. P. Cockerell on "Lord Leighton's Drawings." One curious fact we learn from it is that George Mason owed his study of landscape to Lord Leighton's encouragement and direction. Returning from Italy, he said there was "nothing to paint" in Derbyshire, and Leighton visiting him in that county, drew from nature a number of small sketches for pictures, which were the origin and suggestion of Mason's art. The sketch-book is now, we are told, in the possession of Lord Carlisle.

The *National Review* contains an article by Mr. Lionel Holland on "The Metropolitan Water Question," an article taking a very fair and judicious all-round view of the subject. In regard to the idea of substituting a stringent Government control of the Water Companies for purchase, Mr. Holland argues that the carrying on of private enterprises under such control is an interference with the private rights of those who have embarked money in such enterprises. On this ground as well as on others he therefore argues that purchase is the only satisfactory course open to us.

In this month's number of *The New Review* Mr. E. E. Williams, the author of the series of clever and trenchant (and to our mind very convincing) articles under the title "Made in Germany" replies to his critics, who get some pretty smart rejoinders. Mr. Williams has done good service in calling attention to the manner in which our industries are getting undermined by German plodding and shrewdness taking advantage of our capital and labour warfare and forced-up prices—at least he has endeavoured to do service, though whether English agitators for higher wages, independent of supply and demand, will ever listen to wisdom on this subject, until they find themselves ruined, may be a question.

The *Monde Moderne* gives an illustrated article on the "Ecole des Beaux-Arts" in Paris; one on Père Lachaise and its monuments; one on Moscow and the Muscovites, with illustrations of the principal buildings, one on "L'Ecole Boulle," the furniture-making depôt, and one on "L'Industrie Auto-mobile," with illustrations of various forms of auto-motor carriage—a subject which is becoming of rather serious practical interest.

Macmillan contains an article on "The Story of Selborne Priory," historical, not archæological, but it may have interest to archæologists in its bearings on the history of the priory.

The Quarry contains a useful practical article on "The Development of Sandstone, Limestone, and Marble Quarries," followed by "Some Hints on the Manufacture of Artificial Stone."

The *Pall Mall Magazine* contains a descriptive article by Miss M. C. Leigh on "Stoneleigh and Its Memories," a merely popular article, but the illustrations are good and interesting.

London Society contains a pleasing article on "Michael Angelo" by Miss Mai Dean, a lady some of whose articles on modern painters in the same magazine we have mentioned before.

* The object of these notes is to point out anything in the contents of the current magazines which is of special interest to our readers, with occasional brief criticisms on the views expressed in such articles. When a magazine which has been sent to us is not noticed, it is because that number contains nothing that it is within our province to comment upon.

LEIGHTON BUZZARD WATER AND SEWERAGE WORKS.

THE Waterworks, Sewerage and Sewage-disposal Works of Leighton Buzzard were recently completed at a cost of 21,240*l*, from the plans and under the supervision of Mr. H. Bertram Nichols, C.E., of Birmingham, whose schemes were adjudged the best in an open competition a few years ago.

The Water Supply.

A well and boring has been sunk about a mile away from the town, on the Stanbridge-road, carried down into the Lower Greensand. The well is 8 ft. internal diameter, lined with cast-iron cylinders in segments, carried down to a depth of 48 ft., and below this the well has been deepened a further 16 ft., with 7 ft. diameter cylinders; and below this again the bore-pipes are carried down to a total depth of 200 ft. from the surface, the diameter varying from 10 in. to 8 in. The two sets of cylinders are bracketted together, and at their junction girders and cross girders are placed to carry the pumps. The contractors for the well and boring were Messrs. C. Isler & Co., of Southwark, S.E. A great deal of difficulty was met with in consequence of the sand blowing below the depth of 48 ft. from the surface. Down to this depth the formation is a stiff gault clay, and from below this level it is sand, some of a very loose nature, with bands of varying thicknesses of grey sandstone, congealed stone, pebbles, and sand, and some very hard stone. Owing to the difficulties experienced, the well-sinking operations from beginning to finish took about two and a half years to complete, many stoppages having occurred, and difficulties of an unforeseen nature having arisen.

The cost of the well and boring amounted to 1,759*l*. The water above the depth of 175 ft. from the surface is entirely shut out from the well as this water was found to be impregnated with iron; below this depth, however, the water is of better quality and sufficient in quantity for the present requirements of the town. Thirty feet of unperforated tubes project inside the boring so that the borehole can be continued beyond the depth now reached if in the future considered desirable. The present site of the water tower was chosen by the late Local Board in opposition to the Engineer's advice and wish to have it placed at Stonhill which would have been far more advantageous for the town. The tower itself is an octagonal building with buttresses and recesses of a Gothic character, the dimensions being 27 ft. 6 in., internally on the square. The average thickness of brickwork is about 2 ft. 8 in., but this is widened out in the bottom, immediately above the footings, to a width of 5 ft. 4 in., under which are the footings spread out to 10 ft. The bulk of the brickwork is carried on 5 ft. 6 in. of cement concrete, which extends some distance outside the footings all round the building. The detail work is of a solid character, enriched with terra-cotta mouldings, and special "Heather" facing bricks have been used throughout. The front and entrance of the tower faces towards the town, and the

manager's residence is to the left of the site, looking from the town. The residence contains, on the ground floor, a living room, kitchen and scullery, &c., an entrance hall with porch, and an additional living room, having windows looking out towards the tower, which can be used for office purposes or committee meetings if desired, it being planned by the engineer for that purpose. There are two octagonal towers at the sides of entrance, one carried up above the main tower and having spiral staircase for access to the various floors and to the top of the tank and balcony.

The total height of the brickwork above the ground floor is 82 ft., and on the top of this a strong framed octagonal roof covered with red tiles is constructed with balcony on the summit.

The arrangement of the engines and pumps is in duplicate, so that in case of a breakdown with one set there will be another set of pumps available. Two 9-h.p. nominal Crossley's gas engines of the latest scavenger type work the two sets of three-throw pumps, and two 4-h.p. nominal drive the air compressors for working the ejectors, the tower being the central station for this purpose.

The water is raised into a wrought-iron tank 30 ft. in diameter, and 19 ft. 3 in. in depth, carried on the walls at a height of 62 ft. above the ground floor. The tank is divided into two parts for a depth of 5 ft. from the bottom of the tank. This division has been made in order to allow the whole of one side of the tank to be cleared out while there would remain on the other side of the division a sufficient supply of water for the ordinary purposes of the town. The rising mains from the pumps are carried up through both floors of the building, through the tank bottom, and deliver the water in a cast-iron trough, which makes one complete circle round the top of the tank. The object of this trough is to dessicate the water as far as possible from iron and other matters which might be forced up the main from the pumps. The capacity of the tank is 80,350 gallons, the depth of water with this quantity being 18 ft. 3 in.

There is a good pressure of water throughout the town. The mains vary from 8 in. to 3 in. in diameter, supplied with all requisite sluice valves and hydrants, &c., in suitable positions.

The Sewerage and Sewage Disposal Works.

The sewerage scheme is partly on the "Shone" system, ejector stations being provided at each of the four low parts of the town. The ejectors are in duplicate, and the sewage is raised from these low points by pneumatic power into receiving chambers before being delivered into the gravitating sewers. The cast-iron air mains from the generating station are 3 in. and 2½ in., the sewage delivery pipes being 5 in. in diameter. The whole of the sewers are confined to the public roads. They vary in size from 6 in. to 15 in. in diameter. The "Hassall" pipe joint has been used throughout, the double-lined joint being used for the sewers gravitating to the ejectors, and the single-lined joint for the sewers gravitating direct to the outfall. About one-half of the sewage of the town is ejected, the remainder gravitating to the outfall which is situated to the north of the town. The sewers are constructed in straight lines and good gradients are available. Manholes are constructed at every junction and at lateral changes of deviation, and lamps shafts are provided where requisite. Open ventilation is adopted generally at the road surface, but at the high portions of the town cast-iron shafts are in addition carried up above the houses. Automatic flushing-tanks are provided at the heads of the sewers, and the manholes have flap-valves and sliding disc-valves where necessary. The main outfall sewer is 13 in. in diameter. The sewage purification works are on the "International" system, the precipitation tanks and polarite filters being constructed well above the flood level of the river Ouzel. This was amply demonstrated during the construction of the works, in which time some severe floods have taken place. There are three rectangular tanks sub-divided into six bays, the supernatant water being drawn off from the tanks on to the filters by means of floating outlets. The tanks are adapted for either the quiescent or continuous principle. There are four "polarite" filters, and the effluent, after passing through the filters, flows over and through the land, which is laid out in eight beds for intermittent filtration. A separate outlet is also provided from the filters to the river, arranged in steps for aeration, lined with white glazed bricks. The area of land that has been taken for outfall purposes is 5¼ acres, and the works are laid out for a population of 9,000.

The contractors for the works were Messrs. Garlick & Horton, Limited, of London, and three resident engineers have been engaged since their commencement: Mr. J. R. Blandford, the late Mr. J. P. Kernan, and Mr. J. Angus, the last-named gentleman remaining till the works were completed.

SKIPTON WORKHOUSE DRAINAGE.

THIS workhouse has just been almost entirely redrained, in accordance with plans prepared by Mr. Malcolm Paterson, M.Inst.C.E., of Bradford. As an illustration of the difference between the old method and the new, it may serve a useful purpose to give a few details.

The workhouse is one of the first built under the Poor Law Amendment Act of 1887, and up to last summer presented types of every class of drainage work, from square, dry rubble drains up to Stamford-jointed fireclay pipes. The extensive area occupied by the buildings was crossed and recrossed by one generation of drains after another until the drainage and fittings of the whole premises, internal and external, became a confused and impracticable patchwork, devoid of system, deficient in detail, complicated in an extraordinary degree, and incapable of being made efficient by any improvement in management. No plan existed; four or five separate outlets were in use, and even after some score or two of drains were laid bare for the inspection, the complicated network was but partially unravelled. Although constructed on a steep slope, deep drains prevailed, to reach which 10 ft., 12 ft., and even 15 ft. of strong drift clay had to be cut through. Some of these had no fall, drains being required from ancient cellar baths, sinks, closets, &c., designed almost in the dark, for the use of tramps in the old days when any out-of-the-way place was utilised for these outcasts.

Almost every drain was a drain of deposit, and the only arrangement for flushing was probably worse than nothing. Rats abounded, and the ventilation was random, but mostly at the surface by manhole openings, soil-pipe ventilators being generally trapped at base of soil-pipe, although disconnecting traps existed at the various outlets.

The significance of this our readers will perceive when they reflect upon the constitution of a workhouse population.

A workhouse drain is, in fact, a common sewer *per se;* the common sewer of what is equivalent to a village, with, however, the added dangers of a hospital ward and a casuals ward, often filled every night for considerable periods by persons who at any moment may become centres of infection. Machine tests also proved a large escape of drain air into the basement.

The officials of the Local Government Board had frequently drawn the attention of the Guardians to the more glaring defects, especially the method of flushing to which we have alluded. This was by means of a central manhole into which a cascade of soil-pipe refuse descended some 6 ft. or 8 ft., bespattering the sides. This influx was dammed by means of a plug in the manhole bottom, and when the liquid was one, two, or three feet high, according to the chance discretion of the pauper attendant, the plug was drawn. A soil-drain from the old tramps' cellar, laid, practically, without falls, discharged into this manhole, and at flushing times was put into back water, which sometimes rose to the level of the cellar sinks and closets. The state of the yard closets and urinals was also condemned, and the advice of an expert was recommended. Mr. Paterson was accordingly instructed, first to report, and then to carry out his recommendations.

After reconstruction, the workhouse drainage now consists of: (1) an entirely new system with drains not more than 2 ft. 6 in. to 5 ft. deep, for the waste or foul water only; and (2) the old system partly left in, and now used for top water only, after being thoroughly flushed. All new drains are of 6 in. and 4 in. Archer's fireclay pipes with cement joints, laid in straight lines from manhole to lamphole. The head of each is ventilated by 4 in. lead or cast iron pipes, with copper cages at summit, all covers at surface being closed. Each main drain is provided with a 30-gallon Merrill's automatic flush fixed inside the walls; and the scullery sink with Doulton's grease and automatic flushing trap, which, with ordinary attention, is very efficient. The new latrines have separate basins connected to one 6-in. pipe, and flushed by Merrill's 20-gallon cisterns. The yard urinal partitions are of slate, with polished cement backs and floors, flushed by copper pipes and automatic cisterns. The closet cisterns have 4-gallon self-acting noiseless flushes. All wastes are disconnected below gratings of self-cleansing gullies. Disconnexion above grating is found to lead to choking of grating and overflow of sewage into the foundations. The two outlet manholes are trapped and ventilated both above and below traps.

To effect the transformation of a cellar drainage system into a surface system, it was necessary to take out every cellar sink, bath, closet, or other connexion, most of which were practically disused. There was one exception only, and in this case the mere removal of two wash-basins, from the back to the front of the basement of the central building, secured the desired fall. The flushing arrangements include provision for the top-water system.

In place of the old patchwork, the Skipton Guardians may now be said to possess a system of drainage which, in all essentials, is under absolute control.

The contractors for the works were:—Messrs. B. Jackson & Son, Bradford, drains, &c., and Messrs. Thos. Hill & Sons, Bradford, internal fittings. Every pipe-joint was tested with smoke and water before being covered, by Mr. Darling, afterwards succeeded by Mr. Braithwaite as general clerk of works under Mr. Ascough Rodwell, Sanitary Inspector to the Skipton Rural District Council.

THE SANITARY INSPECTORS' ASSOCIATION.

ON Saturday last the new Chairman of the Council, Mr. W. W. West (Walthamstow), delivered an inaugural address before a large meeting of members of the Sanitary Inspectors' Association. Mr. West showed how the present body of sanitary inspectors, fulfilling duties which by all present authorities were admitted to be of the greatest importance, had by a gradual process of evolution grown out of the old Inspectors of Nuisances, who were, in many cases, mere nominees of the Officer of Public Health or of the surveyor. Under the Public Health Act of 1875, the Local Government Board, in order to have supervision, offered to pay half the salaries of Inspectors of Nuisances. The authorities, seeing their way to getting a large share of their salary charges defrayed, appointed the Surveyor to the Inspectorship, allocating the bulk of his salary to the office of Inspector, thus dishonestly securing a sum to which they were not morally entitled. They allowed, where they did not absolutely direct, that little inspector's work should be done, and the bulk of the officer's time was devoted to his duties as surveyor. In this way they were, to all intents and purposes, avoiding the appointment of the full number of officers directed by the Act, since the appointment of an officer with no intention that his duties should be efficiently and thoroughly performed was not a compliance with, but an evasion of the duty imposed upon them. Two officers were frequently appointed to fill three offices. The surveyor and inspector were one individual, with no intention to perform in any way the inspector's work—an inferior and subordinate class of officer. They were styled Assistant Inspectors of Nuisances, though nominally they were in no way actually assistants to the so-called Inspector, but were really assistants to the Medical Officer of Health, with no recognised official position or responsibility. The Medical Officer of Health thus undertook duties the practical carrying out of which was inconsistent both with his dignity as a member of one of the learned professions, and with the carrying on of his private practice as a medical man. The early Inspectors of Nuisances were often little more than nominal officers, assisting the Medical Officer of Health, who became practically the Chief Inspector, or, as they preferred to be called, the head of the Sanitary Department, instead of occupying his legitimate position as Chief Medical Adviser to the Sanitary Authority. In proportion as a sounder knowledge of sanitary matters was acquired, it was found necessary to appoint men as inspectors who had acquired a knowledge of building construction and similar work, and as it soon became evident that men of this class were of more service than others, the practice became general on the part of Sanitary Authorities in the selection of their officers. In the later developments and as increasing legislation from time to time added fresh duties, sometimes analogous, but more often entirely different, it became evident that while acquaintance with the building trade, plumbing, or similar handicrafts was still useful, yet the work of an inspector had become of so varied a nature that a special training for the position had become absolutely necessary.

References were then made in the paper to the educational work of the Sanitary Institute, in instituting examinations and granting certificates —a work for which the public generally and the inspectors in particular owed a great debt of gratitude to the Institute. It was unfortunate that the possession of this certificate had been very generally considered to be evidence of fitness for the work of the inspector, although the certificate itself did not pretend to be evidence of fitness. It was now admitted all round that the view consistently advocated by the Sanitary Inspectors' Association with regard to the need of a preliminary practical training was the right view, and every member of the Association would hail with pleasure the recent expression of opinion by a leading authority that "some actual preliminary training may in future be required of candidates before receiving a certificate of fitness." The Institute was coming round to this view, and it proved that if the Association approached the matter properly, with a just acknowledgment of the value of the past work of the Institute as well as of the Association, and a recognition that both had in view as their chief object the improvement of the public service, a good work would be accomplished.

A cordial vote of thanks, supported warmly by several speakers, was accorded to Mr. West, and, after the usual conference, the proceedings closed.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Sir Arthur Arnold, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the St. Martin's Vestry 1,000*l.* for the purchase of property for the Green-street improvement; the Shoreditch Vestry 12,000*l.* for the building of a public library; and the School Board for London 100,000*l.* for school building purposes.

Subways under streets.—In our last issue, page 385, we printed the adjourned report of the Highways Committee, in reference to the question of subways under streets. The Committee recommended that the reference made to them and the Parliamentry Committee, on January 21 last, should be discharged.

Mr. Emden now moved to refer the matter back on the ground that the subject had not been properly considered, and in view of its great importance to the public.

This amendment was supported by several other speaker, and in the end the recommendation was referred back. In the course of the discussion Mr. Westacott, the Chairman of the Committee, pointed out that the cost to the Council of carrying out any such scheme as was suggested would represent at least ten million pounds.

The Water Question.—A long discussion then took place on the Water question. The Parliamentary Committee brought up a report on the subject, and stated that, having in mind the opposition offered to the previous transfer Bill promoted by the Council, they had carefully considered whether it might not be possible to prepare a Bill or Bills upon lines which would commend themselves to the great majority of the Council, but they greatly regretted that they had not been able to come to a unanimous conclusion. They recommended, under the circumstances:—

"That the Parliamentary Committee be instructed to prepare a Bill, or Bills, for the purchase of the undertakings of the metropolitan water companies on the following lines:—1. Council to take power to acquire the undertakings of the water companies by agreement, provided that, if the Council acquire any one or more of the undertakings, it shall also proceed with the object of acquiring the rest. 2. Council to take power, in default of agreement, within one year after passing of Act, to purchase compulsorily on arbitration terms as hereinafter stated. 3. The following clause (subject to counsel advising as to form and drafting) is agreed on the understanding that it leaves it open to the arbitrators to consider the question of value from the point of view alike of the company and of the Council, and also on the understanding that (to quote the words of Mr. Plunket) 'it is absolutely clear that the arbitrators are not to be precluded by any legal objections from entertaining all the circumstances which they may think it right to take into their consideration.' Arbitration clause.—The consideration to be paid by the Council for the transfer of the undertaking (if determined by arbitration) shall be such sum of money as the arbitrators determine to be the fair and reasonable value of the undertaking, having regard to all the circumstances of the case. In ascertaining this sum the arbitrators may receive all evidence and consider all contentions that may be urged on behalf of the Council and of the companies respectively, as affecting the value of the undertakings, and shall have full power to deal with the same or any of them in such manner as they in their absolute unfettered discretion may think fit. But no allowance shall be made for compulsory sale, except so far as the arbitrators may award to meet the cost of re-investment. 4. Council to take power to enter into possession of the undertaking of each company on or after the date of completion of a financial year of that company next but one after the passing of the Act, although the purchase money may not yet have been fixed by the award of the arbitrator, on condition that notice shall have been given to acquire compulsorily, and on condition that the Council pay to the shareholders dividends calculated on the average of those declared in respect to the six half-years immediately preceding the publication of the notices for the Bill, until the payment of the purchase money. 5. Council to take power to agree with the companies or any of them, or with any of the shareholders, that the purchase money, when ascertained, may be paid in the form of terminable annuities or otherwise."

There were further formal recommendations dealing with rights of local authorities.

The Earl of Onslow moved as an amendment:—

"That the recommendation be referred back to the Parliamentary Committee with an instruction to prepare a Bill for the purchase by the Council of the undertakings of the eight Metropolitan water companies, containing the provisions in the first five heads, entitled "Heads of Agreement," subject to a provision to the effect that, in the event of the Government passing an Act in the next Session of Parliament, constituting an authority to deal with the Metropolitan water supply, the Council's Bill be read as if such authority had been named in it instead of the Council, and that the obligations involved in any agreements come to under the Bill pass to such authority; and that in the meantime Her Majesty's Government be requested to introduce a Bill constituting an authority for the purpose of dealing with the supply of water to the area now supplied by the water companies, and pending the final settlement of questions between London and the outside areas. And to appoint a special Commission to hold an inquiry as to the relations between London and the outside areas, including the questions of extension or alteration of the present area of supply; and as to severance of sources and works, if such should be found desirable in the interests of all parties concerned, with power to prepare a scheme to give effect to such severance; and for adjusting the financial considerations involved."

The five heads of agreement referred to were:—

"That the Council acquire the undertakings by agreement, provided that if it acquire one undertaking it should proceed to acquire the rest; that in the event of default of agreement within one year after passing the Act the Council purchase compulsorily on arbitration terms; that the Arbitration Clause provides that the consideration to be paid for the transfer of the undertaking shall be such sum of money as the arbitrators determine to be the fair and reasonable value of the undertaking, having regard to all the circumstances of the case, and that after receiving all evidence that might be urged on behalf of the Council and the companies affecting the value of the undertakings the arbitrators shall have full power to deal with the same as they in their absolute discretion think fit, but no allowance shall be made for compulsory sale except so far as the arbitrators may award to meet the cost of reinvestment; that the Council take power to enter into possession of the undertaking of each company on and after the date of the completion of a financial year of that company next but one after the passing of the Act, although the purchase-money may not yet have been fixed by the award of the arbitrator, on condition that notice shall have been given to acquire compulsorily, and on condition that the Council pay to the shareholders dividends calculated on the average of those declared in respect to the six half-years immediately preceding the publication of the notices for the Bill until the payment of the purchase-money; and that the purchase-money might be paid in the form of terminable annuities or otherwise."

Mr. Beachcroft seconded the amendment.

A long discussion ensued, and, on a division being taken, the voting was as follows:—

For the amendment	...	...	48
Against ...	...	...	59

The Hon. L. Holland then moved the following amendment on recommendation (a) No. I.:—

"That all the words after the word 'companies' be omitted, and that the following words be inserted —'on the lines of the compromise hereinbefore set out.'"

Mr. H. H. Marks, M.P., seconded the amendment.

Mr. M'Kinnon Wood said that the Committee would accept the amendment if it were supported by the majority of the Moderate party.

Lord Onslow said that his amendment having been defeated, he was face to face with two alternatives, and as he took the greatest exception to the Parliamentary Committee's report he should vote for the amendment, although, in another place, he would not associate himself with the compromise.

On a division the voting was:—

For the amendment	...	...	31
Against ...	...	...	70

The recommendations were then carried.

River Lea Pollution.—The Rivers Committee recommended, and it was agreed, that the Council do ask her Majesty's Government to take steps to appoint a select committee in the next session of Parliament to inquire into the present condition of the river Lea.

The Council adjourned shortly before eight o'clock.

ARCHÆOLOGICAL SOCIETIES.

ROYAL SOCIETY OF ANTIQUARIES OF IRELAND.—On the 28th ult. an adjourned meeting of the Royal Society of Antiquaries of Ireland was held in the library of the Royal Dublin Society, Kildare-street, Mr. Thomas Drew, President of the Society, occupying the chair. Mr. E. R. M'Clintock Dix read a paper on "Ruined Churches in the Western Portion of County Dublin." He said that while antiquarians devoted much attention to objects of antiquarian interest remote from Dublin there were many objects of great interest in the metropolitan county, some of which had been forgotten and entirely neglected. He referred to the ancient records of the churches of Mulhuddert (formerly called also Ballycullane) Kilmartin, Kilbride, Castlelyons, Kilmahuddrick, Saggart, and produced photographs showing the peculiar features of the buildings, in all of which were deeply splayed windows. They were all utter ruins, and the history and origin of most of them could not be traced. He described the architectural features of the different buildings minutely. The barony of Newcastle was one of great interest. He suggested that the Society should by dividing the labour amongst its members bring out a new edition of "Dalton's History of the County of Dublin." The paper was referred to the Council for publication. Mr. George Coffey read a paper on "Cup and ring Sculpturings." The meeting adjourned to November 25.

BRADFORD HISTORICAL AND ANTIQUARIAN SOCIETY.—The annual meeting and conversazione of the Bradford Historical and Antiquarian Society took place at the Midland Hotel, Bradford, on the 23rd ult. The proceedings commenced with a dinner, at which Mr. J. Norton Dickons, the newly-appointed President, presided, and there were about ninety guests present. The eighteenth annual report, read by Mr. Thomas Howard, Corresponding Secretary, stated that the Society continued in a flourishing condition, with a membership of 232. The financial statement, presented by Mr. W. Glossop, the Treasurer, showed a balance in favour of the Society of 10*3l.* The result of the recent election of officers of the Society was reported. The President is Mr. J. Norton Dickons. The President, in commencing his address, said that although Bradford itself could not be regarded as beautiful, yet within ten miles of it scenes of natural beauty, not to be surpassed anywhere, were to be found. Neither was the district wanting in traces of prehistoric remains, as witness the cup-and-ring marked rocks and stone circles of Rombalds Moor, and in no place in England could ecclesiastical architecture and the modes of living of the monks of old be studied to greater advantage than in the ruined abbeys of Kirkstall and Bolton. The dales and valleys of the district abounded with examples of domestic architecture such as those of Oakwell and Shibden, and whose histories, if they could be recovered and retold, might supply stories of forgotten worthies exceeding in interest the creations of fiction. The President referred with some detail to the wealth of interest to be drawn from peculiarities in the styles of architecture, as exemplified in the ruins of Rievaulx Abbey and Tanfield Church, the monuments and stained glass contained in many parish churches, and the documentary evidence locked up in many a parish chest. Evidence of this last was furnished in a recent paper contributed by Mr. Wroot, culled from the Bradford parish registers. He suggested that the radius of the Society's excursions might with profit be somewhat extended, very little of Yorkshire having as yet been visited.—The adop-

Carfax, Oxford: as proposed. View from Garden.

tion of the report and balance-sheet was moved by Mr. Thomas Lord, seconded by Mr. John Clapham, and carried.

East Riding Antiquarian Society.—The annual meeting of this Society was held in Hull on the 27th ult. The members met at St. Mary's Church, Lowgate, where a paper was read by the Rev. W. C. Bell, M.A., on "The History of St. Mary's Parish Church." Subsequently the business meeting was held in the Town Hall. The Rev. E. M. Cole (Wetwang) presided. Formal business was transacted, including the presentation of a report from the Treasurer (Colonel Pudsey). Mr. Maddock was appointed President, the Secretary was re-elected, as were also the Vice-Presidents, with the addition of the name of Colonel Hobart; and other officers were also elected. A report of the Society's work for the past year was submitted. After the annual meeting there was an interval for lunch, and at two o'clock the members assembled at the Holy Trinity Church. Mr. J. R. Boyle, F.S.A., here read a paper on the history and architecture of the edifice, and the records of the Church were open for inspection. A portion of the afternoon was also spent at the Trinity House, the interesting features in connexion with which were explained by Mr. E. S. Wilson, F.S.A. Later on the Corporation charters were examined at the Town Hall, and following the annual dinner at the George Hotel at night a conversazione took place at the Town Hall.

Illustrations.

CARFAX, OXFORD.

By a special Act of Parliament passed in 1890, the Oxford Corporation was empowered, on the vacation of the living of St. Martin, Carfax, to acquire the church for a much needed street improvement, the parish being united with that of All Saints. The Act also provided that the tower should be retained and maintained as marking a historic site. On the acceptance by the Vicar of another living last year, the Act came into operation, and the Corporation purchased the adjoining properties in order that the whole might be dealt with in a comprehensive scheme.

The church, which was rebuilt in 1820, was an uninteresting example of the Gothic architecture of that period, and has now been removed, together with the adjoining properties, which latter are now being rebuilt to new frontage lines. The only portion of the scheme remaining to be dealt with is the tower. The lower part of this, up to the belfry stage, has always been buried in the church, and is constructed of ancient rubble masonry of the roughest description, plastered over, and, therefore, concealed from view, and devoid of any architectural features. The belfry stage was remodelled some ten or twelve years ago, and, as the view shows, is of no interest architecturally. Having regard to the facts that the tower will now occupy a most important and conspicuous position at the western termination of the High-street, that the lower part has never been intended to be seen, and contains no features worth preserving, and that the upper story is modern in design and construction, I have considered it justifiable to propose the entire remodelling of the design in order to make it

worthy of its position. This was proposed to be effected by casing the lower portion, and reconstructing the belfry stage. It is evident that some such repair must be done to the lower part to ensure its stability, and casing appears to be the only feasible method of dealing with it. These proposals were accepted by the Committee appointed, and recommended to the Council, who have, however, rejected the scheme by a large majority, and referred the matter back to the Committee with instructions to submit a scheme for the mere repair of the tower as it stands. This the Committee have declined to do, and have placed their resignation in the hands of the Council. For the present the question rests in this position, and there is every prospect that a fine opportunity will be lost through a mistaken antiquarianism. HENRY T. HARE.

CHRISTIE LIBRARY, OWENS COLLEGE.

THIS is the building referred to in our article on Manchester architecture last week, as being in progress as an addition to Owens College, with which it is connected by a bridge which forms a picturesque architectural incident.

The plans of the ground and first floors, showing their junction with one end of the bridge, explain the purpose and general arrangement of the building, the exterior architectural treatment of which keeps up that rather symmetrical and, as one might say, semi-classic treatment of Gothic material which characterises the architecture of Owens College generally.

The architect is Mr. A. Waterhouse, R.A., and the drawing, from his own hand, was exhibited at the last Royal Academy exhibition.

HOUSE AT HASLEMERE.

THIS illustration gives a view of a house designed by Mr. Ernest Newton, the drawing of which was in the last Royal Academy Exhibition. The materials are Portland stone and red bricks, with red hand-made tiles, and the lead work is all in cast lead. A plan of the house is given.

Messrs. Maides & Harper were the builders, the work being done on the basis of quantities, without competition. The heating was by Messrs. Longden & Co., and Messrs. Wenham & Waters did the cast lead work, and the water tanks and water supply generally to house, cottage, lodge, and stables.

In regard to the extreme plainness of the exterior, on which we commented in reviewing the Academy drawings, Mr. Newton wishes to say that he prefers, where funds are not unlimited, to spend the money on solid building rather than on ornament, and that when the solid spaces at one's disposal are small they should be kept plain or else the scale and appearance of strength are lost. With this, as a general principle, we certainly quite agree; only we do think that at present there is rather a tendency, among some of our best architects, to exaggerate a little this wholesome plainness in the exterior of a building.

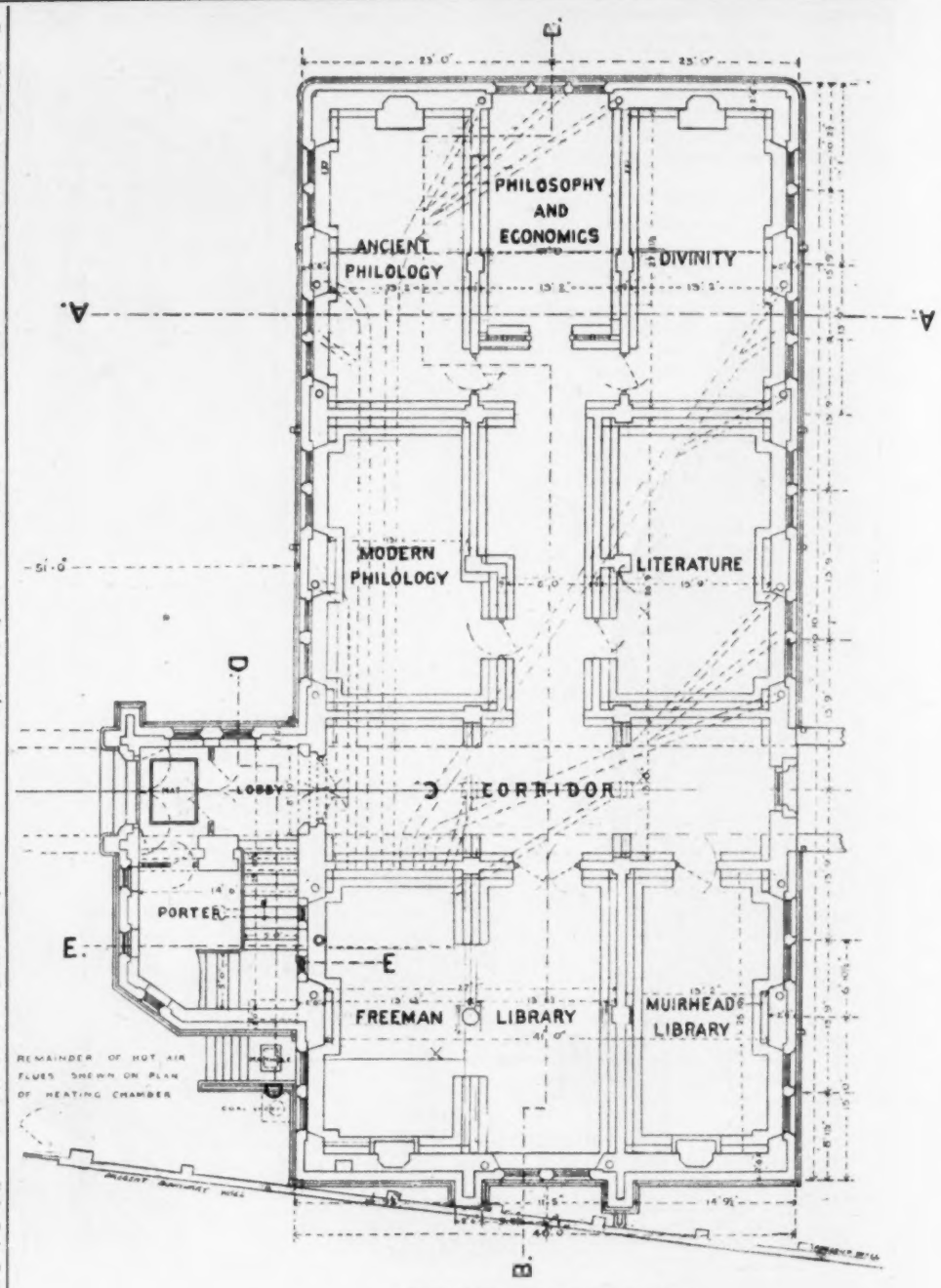
THE BELFRY, CALAIS.

IN this interesting specimen of late Gothic architecture the main portion of the tower rather suffers in effect from being too nearly divided into equal halves (in height) by the lower cornice. In other respects its flat and simple treatment, with the plain wall between the windows, contrasts effectively with the richer treatment of the lantern. The naïve manner in which the octagonal lantern is simply put on, as if it were a separate thing, above the terminating cornice of the square tower, is also characteristic.

The illustration is from a drawing by Mr. C. E. Mallows.

BANK PREMISES, EASTBOURNE.

THIS building is now being erected in Terminus-road for the Capital and Counties Bank, Limited, by Mr. Mark Martin, builder, of Eastbourne, from the design and under the superintendence of the architects, Messrs. Murray, also of Eastbourne. The work in the lower portion is executed in gray granite, supplied by Messrs. Easton & Son, of Exeter, while the upper part is in red Mansfield stone. The site is in a prominent position, but has a narrow frontage. The illustration is a reproduction of drawing No. 1,653, from this year's exhibition of the Royal Academy.



Christie Library, Owens College.

ARCHITECTURAL SOCIETIES.

ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.—At the second meeting, on the 4th inst., of this Section for the present session, a paper by Mr. T. Locke Worthington, on "The Development of Building Estates," was read (in the absence of the author through illness) by the senior secretary. The limit of time necessarily caused so large a subject to be but slightly touched; the author, however, managed to notice most of the many important questions that have to be decided in developing a building estate. These were, briefly, the deciding as to the class of buildings to be erected on any particular estate, having regard to all the circumstances of the case; the dangers of depreciation of circumstances, of over supply or unsuitable supply; the difficulties of site and soil as to their hygienic qualities, and the stability of works put upon them; the question of spaces to be left for future public buildings and present recreation grounds, gardens, allotments, and fresh air; of height of buildings; of overcrowding; of decentralisation of population, and rapid means of locomotion; the difficulties and hardships of tenure of property and the probable superiority of buildings should the builder be also the freeholder were mentioned; also the legislation which promotes, not only the health and convenience of the occupiers and the public, but also and therefore the interests of the owner. Estates providing dwellings for the very poor were spoken of, Mr. Worthington holding that, except for single men and women, as in Lord Rowton's and other common lodging-houses, there has not been yet any successful example; and he suggested that private enterprise should be aided in this direction by a Government bounty. Dwellings of various classes for small but provident wage earners had been proved both good and profitable. In estates for middle and upper-class tenants, low rents in proportion to accommodation were often the cause of disaster and over supply in localities where the demand for such property was not great. It was absolutely essential to the success of such property that the demand should exceed the supply, and that it should be well built, so as to minimise cost of maintenance. The question of dilapidations and repairs, and of agreements, and the necessity for more care in the drafting of the latter, were also noted.—There was a very lively discussion, and much useful advice given and taken on the subject. The Special Visitor, Mr. J. Crawter, gave considerable amusement and information in his very useful and pithy remarks.—The next meeting will be held in conjunction with the A. A. Camera Club on November 18.

PHOTO SPRAGUE & CO 4 & 5 EAST HARDING STREET FETTER LANE E.C.

OF THE SITE OF THE FORMER CHURCH, &c.

ITECT

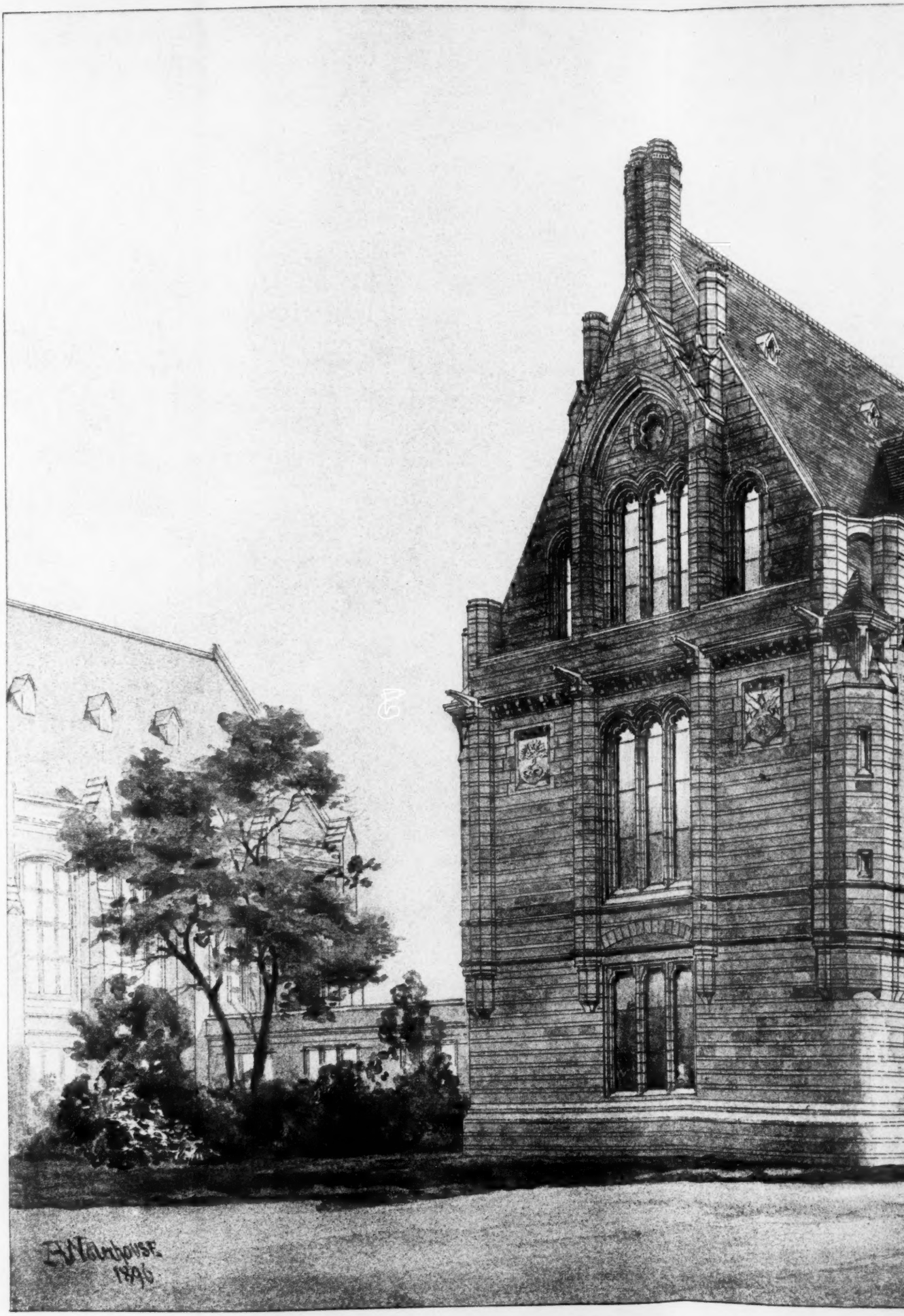
CARFAX TOWER AS LEFT AFTER THE DEMOLITION OF THE CHURCH.

DESIGN FOR CASING CARFAX TOWER, OXFORD, AND TREA
MR H T HARE, ARI

INS. PHOTO. SPRAGUE & Co. 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

AND TREATMENT OF THE SITE OF THE FORMER CHURCH, &c.

HARE, ARIBA, ARCHITECT



THE CHRISTIE LIBRARY, OWENS COLLEGE, MANCH

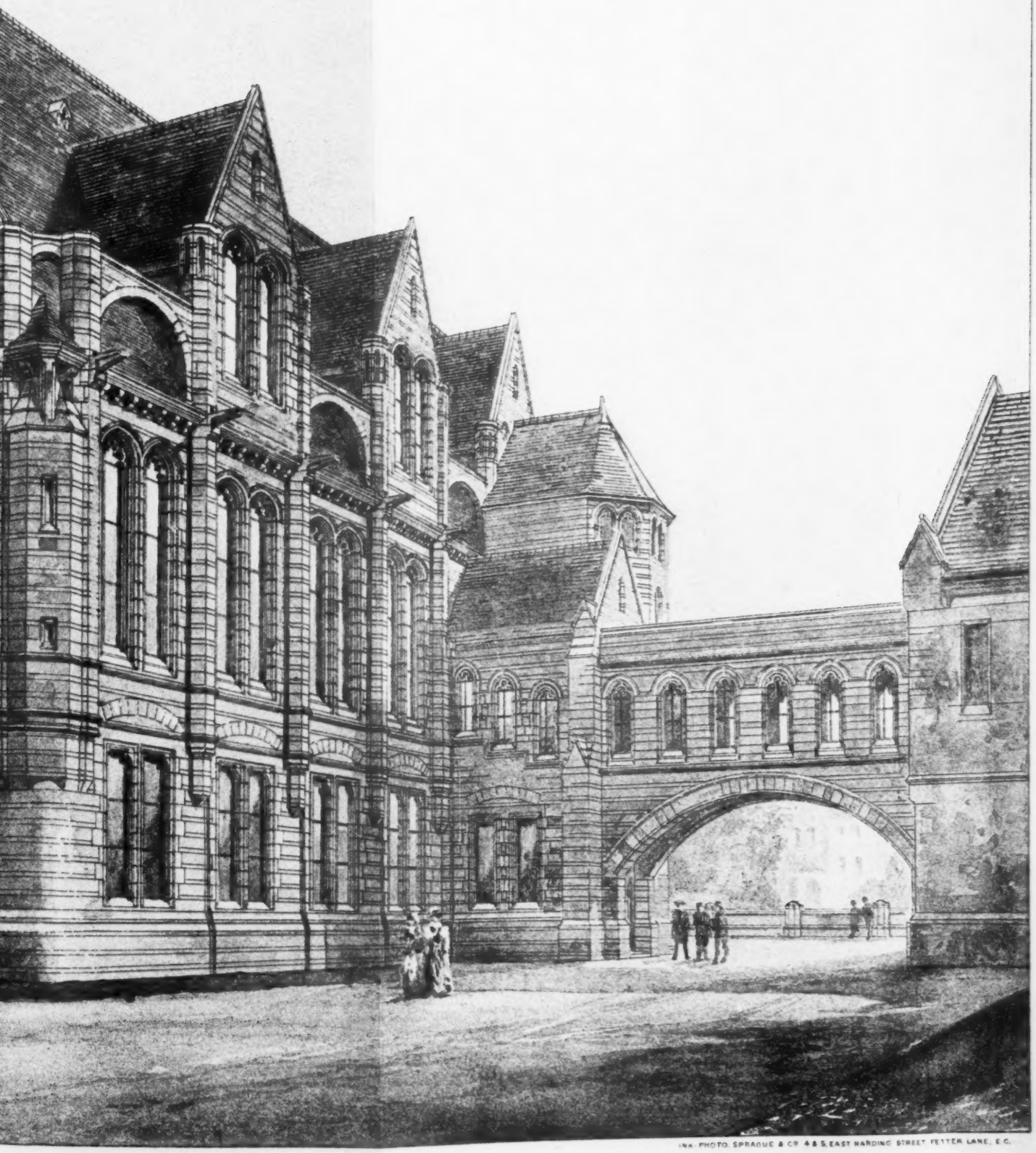
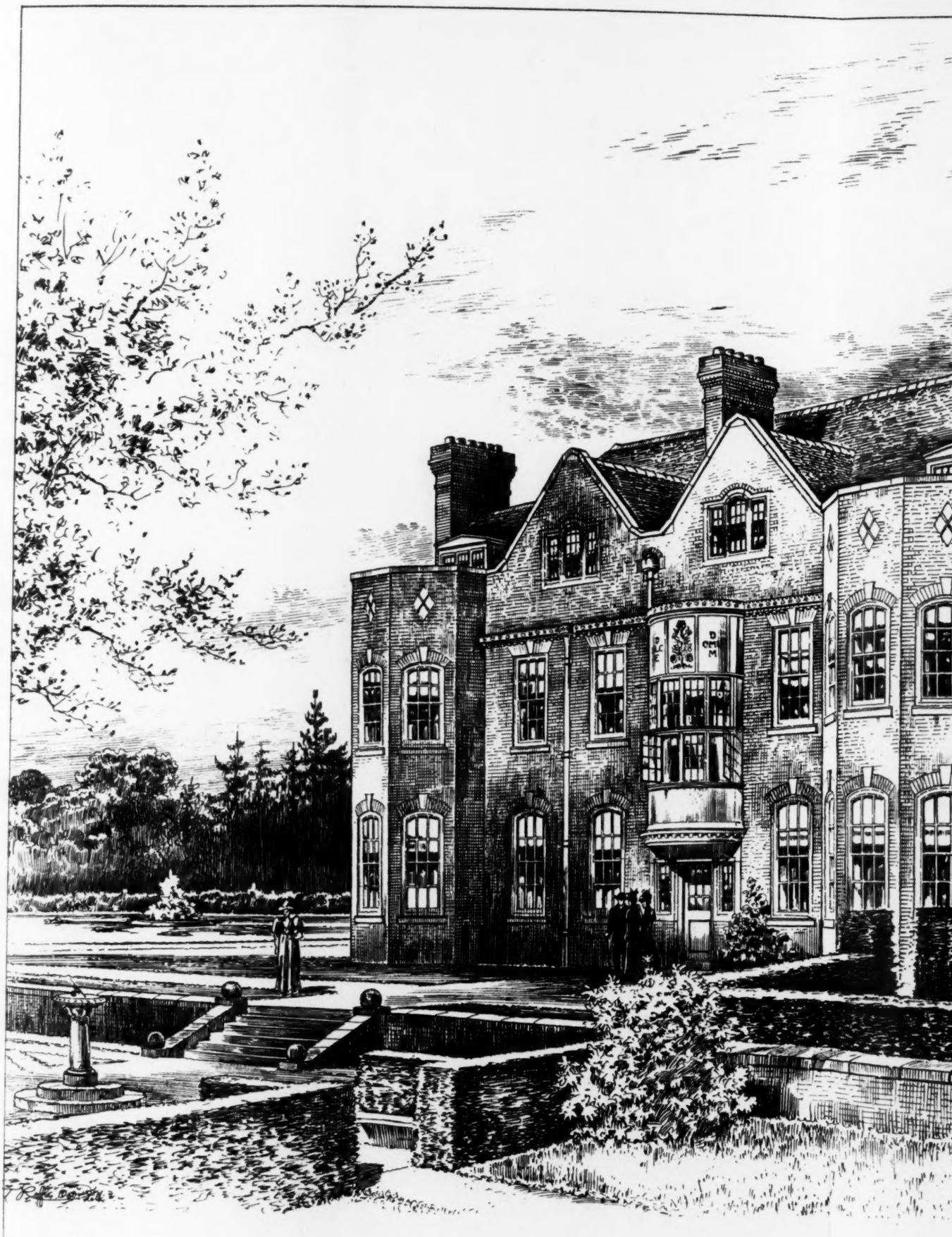


PHOTO. SPRAGUE & CO. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

E, MANCHESTER.—Mr. A. Waterhouse, R.A., Architect



HOUSE AT HASLEMERE.—Mr. Er

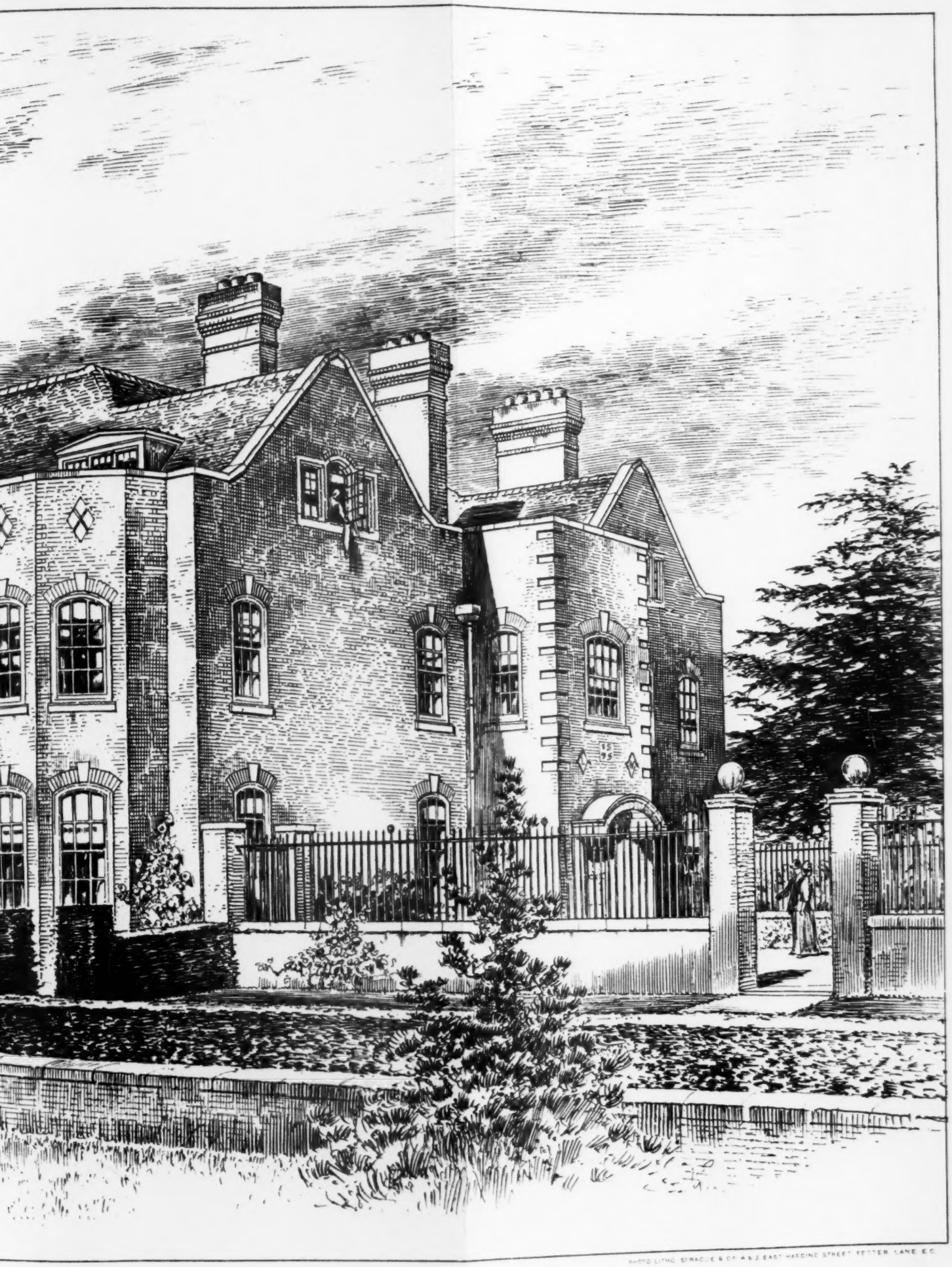


PHOTO-LITHO. STRACHE & CO. 43 EAST HARDING STREET, FETTER LANE, E.C.

ERE. Mr. Ernest Newton, Architect.

From the Rue de la Citadelle

THE BELFRY CALAIS

Drawn by C.E. Mallows 1894

PHOTO-LITHO. SPRAGUE & Co. 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

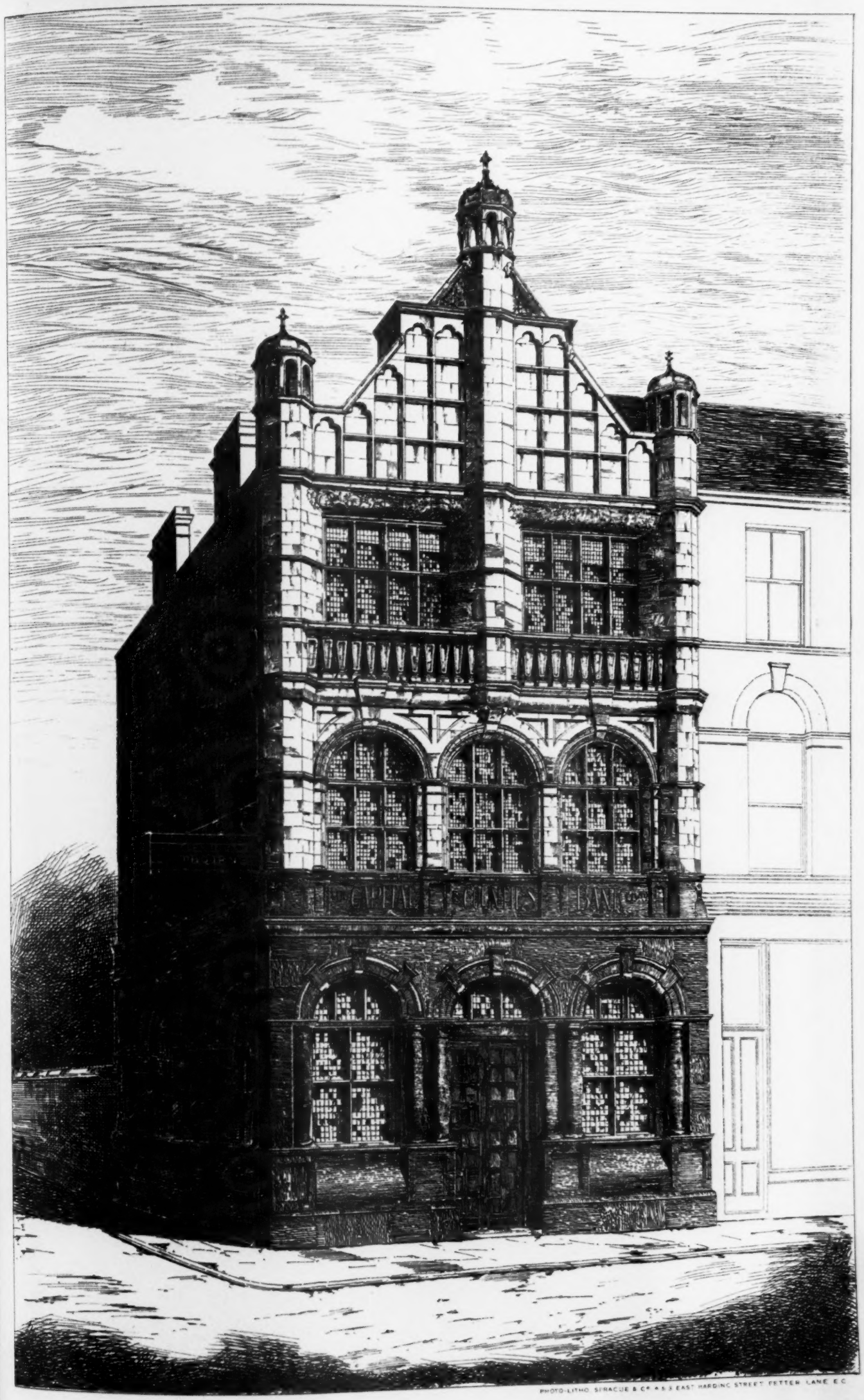
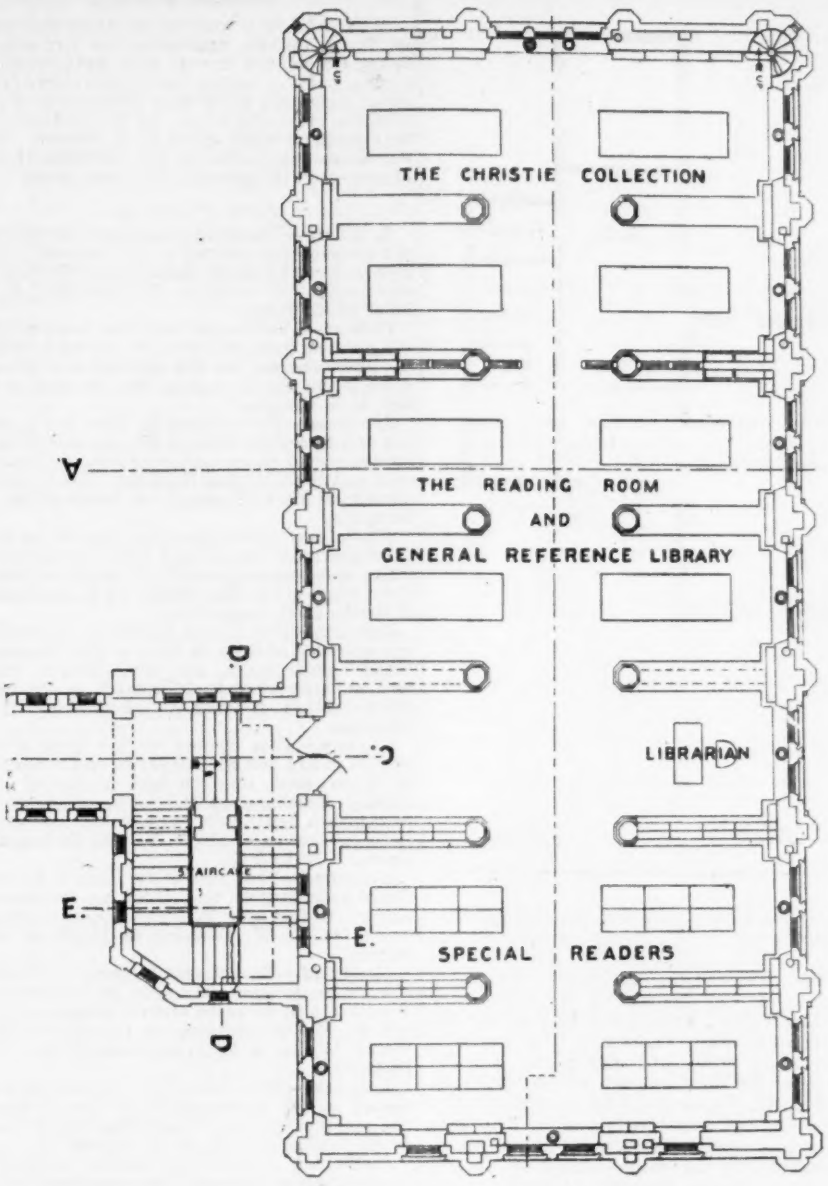
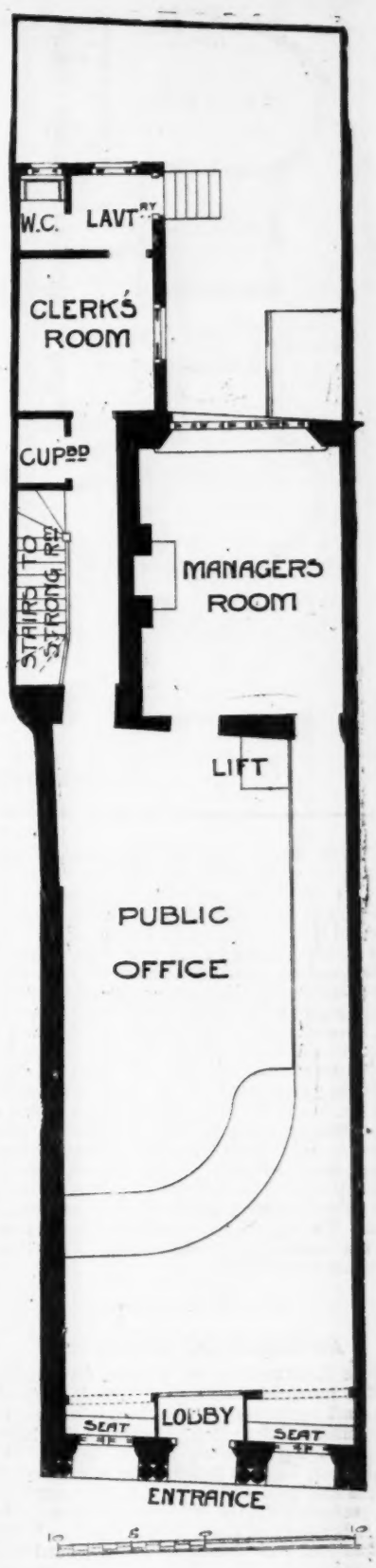


PHOTO-LITHO. SIRACUE & Co. 45,5 EAST HARDING STREET FETTER LANE E.C.

BANK PREMISES, EASTBOURNE.—Messrs W H & J D Murray, Architects.



Christie Library, Owens College. Plan of First Floor.

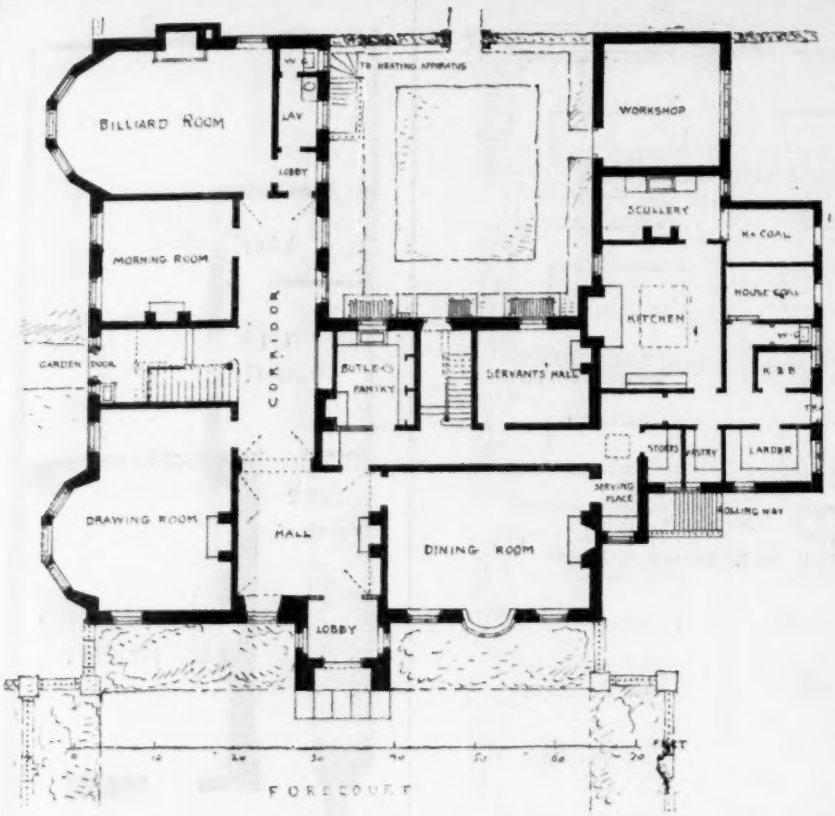


Bank, Eastbourne. Plan.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—The second meeting of the session of this Association took place on Friday evening last week, in the Association Rooms at the Exchange Buildings, the President (Mr. Wm. Harman) in the chair. The following gentlemen were elected as honorary members:—Rev. G. H. Cameron, Messrs. W. L. Hodgkinson and W. Fitzmaurice; as member, Mr. W. De Lacy Aborne; as Associates, Messrs. James Dallas, A. B. Richardson, and G. Povey. Mr. Harold Baker read a paper entitled "Warwick Tower and Town," which was well illustrated by upwards of sixty lantern slides. Mr. Baker had been fortunate in having a free run of the Castle and permission to photograph everywhere, and he produced results which were much appreciated by his audience. The lecturer gave an account of the history of the town, which is rich in architectural beauty and historical interest, tracing it back to the ancient days of Alfred the Great, whose daughter, Ethelfleda, built a castle there in 915, nothing of which remains but the mound in the courtyard of the present castle. The earliest portion of this latter dates from the fourteenth century, and the larger part of the present building was completed in the same century. Attention was also drawn to the town gates; Leicester's Hospital, a fine old half-timber building, the garden of which still remains divided into strips, as the ancient custom was; St. Mary's Church, with its quaint semi-Classic treatment; and the beautiful Beauchamp Castle, the contract for which is extant, giving the cost—a sum, reckoned at present value—amounting to 40,000*l*. The general work and details of this chapel are very fine, and form, perhaps, the best example of fifteenth-century work in the country. The lecture was listened to throughout with great interest.

SHEFFIELD SOCIETY OF ARCHITECTS.—At the meeting of this Society, on Tuesday evening, Mr. J. D. Leader, F.S.A., an honorary member of the Society, read a paper entitled "A Study in Domesday," the object of which was to settle some points in regard to local history and topography, especially the site of the "vill" of Hallam and Waltheof's Hall. Mr. Leader argued that the vill of Hallam was the High-street of the present town of Sheffield, and that Waltheof's Hall stood on the site of the Castle hill. He quoted instances to show how the boundaries of manors had been changed since the Domesday survey, and pointed to a diagram, specially prepared by Mr. C. J. Innocent, to show how small a portion of the whole manor was that now called Sheffield Township. His contention was that the Manor of Hallam at the time of Domesday extended up to the junction of the rivers Sheaf and Don, and that the Sheffield of Domesday was Sheffield Park and nothing more. Granting this, all difficulties as to the site of Waltheof's Hall would vanish, and we could understand that the Domesday vill of Hallam was neither in the Rivelin valley nor at Burnt Stones, but lay between the hall and the town head at Sheffield. How and why the name of Sheffield absorbed the name of Hallam, or caused it to shrink within the limits of two rural townships, was not explained. Certain it was that the superiority of the name Sheffield had fully established itself in 1284, the date of Kirkby's Inquest, when Sheffield, Bradfield, Ecclesfield, three vills, and half Handsworth were held by Thomas de Furnival of the King in capite. These vills constituted the division or district called Hallamshire, and Mr. Leader made the suggestion that Hallamshire was an ancient taxable unit in pre-Norman times, and that the same explanation might account for other so-called shires, such as Northallertonshire, Sowerbyshire, Mashamshire, Richmondshire, and perhaps others. After the conclusion of the paper, on the motion of Mr. E. M. Gibbs, seconded by Mr. C. J. Innocent, Hon. Secretary, a resolution of sympathy with the Council of the Royal Institute of British Architects on the loss sustained by the death of the secretary, Mr. W. H. White, was unanimously passed.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.—At the meeting on Wednesday last week (referred to in our Note, page 379 *ante*) it was resolved to give this more extended title to the proposed Association, instead of the title "Dublin Architectural Association" originally proposed.



House at Haslemere. Plan. [See page 404.

Mr. W. G. Doolin took the chair. Mr. W. R. Gleave, Hon. Secretary *pro tem.*, read a letter from Mr. W. R. Maguire offering a donation of two guineas and a subscription of one guinea a year and (under conditions) a Travelling Studentship of ten guineas for the year 1897. Several other donations and subscriptions were also promised, and the following elections were made:—As President, Mr. R. Caulfield Orpen; Vice-Presidents, Mr. Howard Pentland and Mr. Joseph Holloway; Hon. Secretaries, Mr. W. R. Gleave and Mr. R. M. Butler; Hon. Treasurer and Librarian, Mr. F. Hicks; Hon. Auditors, Mr. A. J. M'Loughlin and Mr. W. F. Beckett. It was resolved that a committee of seven be elected by ballot, with power to add two to their number; twenty-seven names were selected, to be balloted for on Monday evening next, the result to be announced at a general meeting called for Tuesday evening next. The subscription was fixed at 10s. a year. At the conclusion of the meeting thirty-three members were enrolled.

ENGINEERING SOCIETIES.

The Institution of Junior Engineers.—The inaugural meeting of this Institution's sixteenth session was held on the 6th inst. at the Westminster Palace Hotel, the chair being taken by the retiring President, Mr. A. Denny. The preliminary business included the announcement of the admission of twenty-eight new members, the presentation of the Institution premium to Mr. F. J. Bancroft, of Hull, for his paper on "The Stability of Tall Chimneys," and a cordial vote of thanks to Mr. Denny for his services as President, which was proposed by the Chairman of the Institution, and seconded by Mr. E. Berry. Mr. Denny then introduced the President-elect, Mr. A. R. Binnie, M. Inst. C.E., who proceeded to deliver his Presidential address. After referring to the beneficent character of the work of the engineer, mention was made of the varied nature of the subjects of which he should have some knowledge in the intelligent and successful execution of his duties. The principal portion of the address was devoted to considerations with respect to some of the ways in which water enters into and demands the professional attention of the engineer. Source of supply, rainfall observations, reservoir capacity, durations of draught, dams, and embankments, were touched upon. Sewage works processes, as adopted in London, were alluded to, and the satisfactory results achieved pointed out. The difficulties encountered in dealing with the force of water in sea works, low-land reclamation, pier sinking, and other engineering undertakings were indicated; and in this connexion reference was made to the construction of the Blackwall Tunnel. The address concluded with a tribute of honour to the pioneers of the profession—Smeaton, Telford, Rennie, the Brunels, and the Stephensons, whose works and lives would so amply repay study and emulation. On the motion of the Vice-Chairman of the Institution, Mr. Basil H. Joy, seconded by Mr. Ernest King, a hearty vote of thanks was passed to Mr. Binnie for his interesting address, and the proceedings terminated with the announcement of the next meeting on Friday, December 4, when a paper would be read on "Electric Central Station Working," by Mr. P. W. McDougall, A.I.E.E., of Deptford.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

At the meeting of the London County Council on Tuesday last the Building Act Committee reported that they had considered the undermentioned applications under the London Building Act, 1894, and had arrived at the following decisions. Those applications which have been agreed to are granted on certain conditions:—

Dwelling-houses on Low-lying Lands.

Greenwich.—That the solicitor do prepare a licence, under Section 122 of the London Building Act, 1894, to Mr. E. E. Wood, for the erection of fourteen dwelling-houses on low-lying land situated on the north side of Lower Woolwich-road, Charlton, in accordance with the plan submitted with his application.

Woolwich.—That the solicitor do prepare a licence, under Section 122 of the London Building Act, 1894, to Mr. V. J. Wilmot, for the erection of twelve dwelling-houses on low-lying land situated at Abbey-grove, Abbey-wood, in accordance with the plan submitted with his application.

Deptford.—That the solicitor do prepare a licence, under Section 122 of the London Building Act, 1894, to the South-Eastern Railway Company, for the erection on low-lying land the property of the company, situated near the Surrey Canal and Trundley's-road, Deptford, of blocks of buildings for artizans' dwellings, in accordance with the plan submitted with the application, by Messrs. Humphrey, Davies, & Co., on behalf of the company.

Deptford.—That the solicitor do prepare a licence, under Section 122 of the London Building Act, 1894, to Mr. C. J. Heryet, for the erection of sixty-six cottages on low-lying land situated in Boord-street and Grenfell-street, Blackwall-lane, East Greenwich, in accordance with the plan submitted with his application.

Formation of Streets.

Woolwich.—That an order be sealed and issued to Mr. G. Whale, sanctioning the formation or laying out of two streets, each 40 ft. wide, for carriage traffic on land on the southern side of High-street, Plumstead, one of such streets being in continuation of Butcher's-lane, on his application to the Council on behalf of Mr. G. P. Weaver. That the names Butcher's-lane (in continuation) and Mineral-street be approved for the new streets.

Lines of Frontage.

Lewisham.—That consent be given to the retention of a dwelling-house erected on the south-east side of Brookdale-road, Catford, flanking upon The Retreat, on the application of Messrs. Phillips & Norfolk, on behalf of Mr. James.

Fulham.—That consent be given to the erection of a porch on the north side of St. Andrew's Church, St. Andrew's-road, on the application of Messrs. Aston Webb and E. Ingram Bell, on behalf of the Rev. E. S. Hilliard.

Lewisham.—That consent be given to the retention of a three-story building with one-story shop in front as erected on the north-west side of Brockley-road and flanking upon Holdenby-road, on the application of Mr. C. Hubbard, on behalf of Mr. E. Tompkins.

Westminster (detached).—That consent be given to the erection of an iron and glass covered way or shelter at the entrance doorway of the Royal Palace Hotel, High-street, Kensington, on the application of Messrs. H. S. Legg & Son.

Battersea.—That consent be given to the erection of a one-story addition in front of the "Prince of Wales" public-house, No. 339, Battersea Park-road, at the corner of Parkside-street, on the application of Mr. T. J. Lynes, on behalf of Mr. T. S. Thwaites.

Clapham.—That consent be not given to the erection of two houses, with shops, on the east side of Webb's-road, with the flank of one of such buildings abutting upon Mallinson-road, and to the erection of a house, with shop, in the latter-road, on the application of Mr. H. Branch, on behalf of Messrs. J. Nicks & Co.

Hampstead.—That consent be given to the erection of a studio at the rear of No. 25, Priory-road, Kilburn, to abut upon West-end-lane, on the application of Mr. W. Whiteley, on behalf of Miss Duncan.

Hampstead.—That consent be given to the erection of a conservatory and a glass and iron verandah in front of a house to be erected between Nos. 74 and 80, Fitzjohn's-avenue, on the application of Messrs. Wylson & Long, on behalf of Mr. R. S. Parker.

Lewisham.—That consent be given to the erection of an oak balustrade to the bay window of No. 109, Stondon Park, Honor Oak-road, Brockley, on the application of Mr. A. H. Kersey.

Paddington, South.—That consent be given to the erection of an iron and glass covered-way in front of No. 7, Orme-square, on the application of Mr. J. Anderson, on behalf of Mr. J. Whaley.

Peckham.—That consent be given to the erection of a porch and covered-way at the new Relief-station, No. 106, Peckham Park-road, to abut upon Bird-in-Bush-road, on the application of Mr. R. P. Whellock, on behalf of the Guardians of the Poor for the parish of Camberwell.

St. George, Hanover-square.—That consent be given to the erection of a projecting entrance doorway to a proposed addition to the Berkeley Hotel, upon the site of Nos. 73 and 74, Piccadilly, on the application of Mr. R. Griggs, on behalf of the Berkeley Hotel, Limited.

St. George, Hanover-square.—That consent be given to the erection of oriel windows at the first and second floor levels in front of six houses on the east side of Park-street, Grosvenor-square, between the "Hereford Arms" public-house and No. 51, Green-street, on the application of Mr. H. D. Cresswell, on behalf of Messrs. W. Cubitt & Co.

† *St. George, Hanover-square.*—That consent be not given to the erection of an enclosed porch on the east side of No. 74, Eaton-terrace, Eaton-square, to abut upon Graham-street, on the application of Messrs. W. S. Julian & Sons, on behalf of Miss Allen.

Wandsworth.—That the application of the Wandsworth District Board for an extension of the periods within which the erection of the flank of a house on the north side of St. Ann's-hill, to abut on Allfarthing-lane, be granted.

Width of Way.

Bermondsey.—That consent be given to the erection of an addition to Nos. 73 and 75, Weston-street, at less than the prescribed distance from the centre of that street, on the application of Messrs. Barnes-Williams, Ford, & Griffin, on behalf of Messrs. R. W. Spicer & Co.

Greenwich.—That consent be not given to the retention of a one-story workshop, erected on the north side of Conington-road, abutting on a narrow footway between that road and Coldbath-street, on the application of Mr. E. E. Wood.

Hackney, South.—That consent be not given to the erection of an addition to Messrs. Bush & Co.'s buildings on the east side of Sheep-lane, on the application of Mr. J. Hamilton.

Limehouse.—That consent be given to the erection of a covering over the yard at Old Aberdeen Wharf, No. 91, High-street, Wapping, on the application (further considered) of Mr. C. C. Bradley, on behalf of Messrs. Taylor Bros.

Rotherhithe.—That consent be not given to the erection of three houses on the west side of Rotherhithe-street, upon part of the garden of No. 670, on the application of Messrs. Tolley, Son, & Thompson, on behalf of Messrs. E. G. Paris Bros.

St. George-in-the-East.—That consent be not given to the erection of five six-story warehouses on the east side of Backchurch-lane, between Pinchin-street and Ellen-street, and to abut at the rear upon Splidt-street, on the further application of Mr. E. A. B. Crockett, on behalf of Messrs. Browne & Eagle, Limited. [The application has, since this recommendation was made, been withdrawn by Mr. Crockett.]

Open Space about Buildings.

Islington, East.—That the Council do, in the exercise of its powers under Section 41 of the London Building Act, 1894, permit the erection of buildings of a portion of the open space at the rear of the Blackstock Park Hotel, 284, Seven Sisters-road, at the corner of the Blackstock-road, on the application of Messrs. Treacher, Son, & Fisher, on behalf of Mr. Edwin Morgan.

St. George, Hanover-square.—That the sanction of the Council be not given to such deviations from the plans, certified by the District Surveyor under Sections 13 and 43 of the London Building Act, 1894, of the space previously occupied by buildings at Nos. 141 and 142, New Bond-street, and premises at the rear fronting upon Bloomfield-place, as would permit of the erection upon that site of new buildings, on the application of Mr. F. A Foster, on behalf of Mr. A. Coombs; as no open space is shown upon the applicant's plan to be provided at the rear of the new building; and, moreover, apart from other objections, having regard to the fact that the height of a portion of the buildings formerly upon the site was only about 11 ft., it is considered that the erection of the new building of the height proposed might unduly interfere with the access of light and air to the premises adjacent.

Wandsworth.—That the Council, in the exercise of its powers under Section 41 of the London Building Act, 1894, do not permit the erection of a two-story dwelling-house on the south side of Stockfield-road, Streatham, with an open space at the rear, not in accordance with the rules of that Act, on the application of Mr. H. J. Miller, on behalf of Mr. E. J. Gatfield.

Whitechapel.—That the permission of the Council be given to the rebuilding of a two-story cottage on land adjoining Royal Mint-street, and adjacent to the dock branch of the Great Eastern Railway, without an open space at the rear of such cottage, on the application of Mr. J. Wilson, on behalf of the Great Eastern Railway Company.

Line of Fronts and Width of Way.

Norwood.—That consent be given to the erection of houses with shops on the west side of Brixton-hill, on the sites of Nos. 274, 276, and 278, and to the erection of buildings on the north side of Mill-lane, Lambeth, on the further application of Mr. W. Theobalds, on behalf of Mr. T. W. Dobson.

Kensington, South.—That consent be not given to the erection of an inclosed covered way, to be constructed of wood and covered with slates, upon part of the forecourt of No. 2, Victoria-road, on the application of Mr. H. G. Ibberson, on behalf of Mr. H. Hampton.

Lewisham.—That consent be not given to the erection of one-story shops upon the forecourts of Nos. 1 and 2, Herbert-villas, Catford-bridge, on the application of Mr. A. L. Guy.

Line of fronts and space at rear.

† *Hammersmith.*—That consent be given to the proposed frontage of a block of residential flats, with four shops on the ground floor, on the west side of Richmond-road, at the corner of Wharton-road; and that the Council do, in the exercise of its powers under section 41 of the London Building Act, 1894, allow a modification of the provisions of that section with regard to open spaces about buildings, so far as relates to the erection of that block, and also to the erection of a second block of flats on the west side of Richmond-road, flanking upon Addison-gardens, with open spaces at the rear of and about each of such buildings respectively, on the application of Messrs. Booth & Fox, on behalf of the Kensington Freehold Land Trust, Limited.

Formation of Streets.

Hampstead.—That an order be sealed and issued to Messrs. Farebrother, Ellis, Clark & Co., sanctioning the formation or laying out of a street, 45 ft. wide, for carriage traffic, between Redington-road and Frognal-lane, on the further application to the Council, on behalf of Sir S. M. M. Wilson, Bart., and Mr. E. Michael. That the name Chesterford-gardens be approved for the new street.

Fulham.—That an order be sealed and issued to Mr. T. R. Hope, refusing to sanction the formation or laying out for carriage traffic of a street varying in width from 32 ft. to 50 ft., to lead out of the west side of Parsons-green-lane, adjacent to the Royal Rosamond Laundry; also the formation of a street 20 ft. wide for foot traffic, to lead out of that lane on the north side of the said laundry, and the erection of buildings in the said street for carriage traffic, on his application to the Council.

Hampstead.—That an order be sealed and issued to Mr. Ernest Owers, sanctioning the formation or laying out of two streets, each 40 ft. wide, for carriage traffic, on the Burgess-hill Estate, between Finchley-road and Platt's-lane, on his further application to the Council on behalf of Major Burgess. That the names Clorane-street and Briardale-street be approved for the new streets.

Hampstead.—That an order be sealed and issued to Mr. W. E. Sanders, refusing to sanction the formation or laying out for carriage traffic of a street, 42 ft. wide, to lead from Haverstock-hill into Lawn-road, on his application to the Council on behalf of Mr. J. Sanders.

Recommendations marked † are contrary to the views of the Local Authorities.

The Student's Column.

RURAL DRAINAGE.—XIX. AND XX.

IT is essential that the student should thoroughly understand that the term "filtration" as employed in sewage disposal does not mean simple mechanical straining or screening, but refers to a biological process.

The evidence in support of this statement includes the following observations:—

1. "Nitrification in soils and waters is found to be strictly limited to the range of temperature within which the vital activity of living ferments is confined.

2. Nitrification is also dependent upon the presence of plant-food suitable for organisms of low character.

3. Antiseptics are fatal to nitrification.

4. Raising sewage to the boiling-point entirely prevents its undergoing nitrification.

5. The heating of soil to the same temperature effectually destroys its nitrifying power.

6. Nitrification can be started in boiled sewage, or in other sterilised liquid of suitable composition, by the addition of a few particles of fresh surface-soil, or a few drops of a solution which has already nitrified; though without such addition these liquids may be freely exposed to filtered air without nitrification taking place." (R. Warrington.)

The manner in which soil acts as a purifying agent was investigated by MM. Schloesing and Muntz, and the results have been ably summarised by Mr. W. Santo Crimp, in "Sewage Disposal Works," p. 131.

"When a liquid, such as sewage, is applied, the suspended matters are arrested at the surface. This is the first action. The water, freed from its insoluble matters, descends into the soil, and each particle of earth being surrounded with an extremely thin coating of liquid, an enormous surface of water is presented to the air contained in the soil. The second action of the soil now comes into operation, which is similar to slow combustion. The organic impurities are reduced to carbonic acid, water, and nitrogen, as in active combustion; but the organic nitrogen itself, which is more difficult to oxidise than either carbon or hydrogen, is changed into inorganic compounds. The means by which these changes are effected are now understood, and are doubtless due to organisms."

Irrigation and Sewage Farming.

In giving evidence in a recent arbitration case between the Alfreton Urban District Council and Mr. Edward W. Ives, Colonel Coke, one of the Local Government Board Inspectors is reported to have said that "It is the invariable practice of the Local Government Board under no circumstances to admit of any description of filter instead of land irrigation. That was one of the cardinal rules of the Board." In "The Drainage of Villages" by William Spinks, A.M.Inst.C.E., it is further stated that the "rule of the Local Government Board is as a minimum one acre of land for 2,000 persons for a filtration area clear of works."

Broad irrigation, as distinguished from intermittent downward filtration, has been defined as "the distribution of sewage over a large surface of ordinary agricultural ground, having in view a maximum growth of vegetation (consistent with due purification) for the amount of sewage supplied."

The direct application of sewage to land is undoubtedly the most natural course to pursue, and where sufficient land of a suitable quality is available, and where the process is properly attended to, satisfactory results are inevitable. Unfortunately, suitable land in the vicinity of populous neighhourhoods is becoming scarce, and the attempts to use unsuitable land and insufficient areas, combined with carelessness in management, have brought sewage farming into disrepute. An immediate result of this state of opinion has been to increase the difficulty in obtaining land on reasonable terms, and this difficulty has extended to rural districts.

The chief objections raised against sewage farming are:—

1. "Plant life takes up its nourishment from manures, either liquid or solid, in very small quantities at a time, and only at certain seasons. At other times the presence of such manure would be absolutely useless to the plant, and probably detrimental to its progress.

2. In deep winter, when the ground is frozen hard, the raw sewage cannot be purified at all, and it is generally discharged in that condition into the nearest stream. The same thing occurs in summer when hay is a crop grown on the farm, no raw or even settled sewage being allowed on the hay-grass for some considerable time, and consequently the crude sewage passes unpurified into the nearest stream as a matter of course" ("Proceedings of the Association of Municipal and County Engineers," vol. xviii., p. 308).

3. Assumed pollution of subsoil-water, of rivers, of the atmosphere, and of the crops.

These objections are real if the conditions of suitability, area, and management are not satisfactory.

The following propositions, submitted by the late Dr. Alfred Carpenter to the meeting of the British Medical Association, held in Glasgow, in 1888, are interesting, and are fully confirmed by the eminent opinions collected by Mr. Roechling, and communicated by him at the Sanitary Congress held at Newcastle-upon-Tyne, 1896, in a paper entitled "The Present Status of Sewage Irrigation in Europe and America."

"1. That the application of the sewage of a water-closet town to land in close proximity to dwelling-houses is now injurious to the health of the inhabitants of those houses provided the sewage be fresh; that it be applied in an intermittent manner, and the effluent be capable of rapid removal from the irrigated fields.

2. The judicious application of sewage to soil of almost any kind, if it be mainly inorganic, will satisfactorily cleanse the effluent water, and fit it for discharge into any ordinary stream, provided the area treated is not less than an acre for each 250 persons.

3. That vegetable products grown upon fields irrigated by sewage are satisfactory and safe for both animals and man.

4. That sewage farms, if properly managed, do not set up either parasitic or epidemic disease among those working on the farm or among the cattle fed upon its produce.

5. That this immunity exists because the conditions, necessary for the propagation and continuance of those disease germs which affect man and animals are absent; the microbic life on sewage farms being antagonistic to the life of disease germs, the latter therefore soon cease as such to axist.

6. That sewage farms may be carried on in perfect safety close to populations. It is not however, argued that the effluent water is safe to use for dietetic purposes.

7. That there is an aspect in sewage farming which shows that it is a wise policy for the nation to encourage that form of utilisation from a political economy point of view.

8. That to be financially successful such farms require that the rainfall be separated from the sewage, the area large enough for alternate cropping, and the capital employed sufficient to ensure a continuous and rapid consumption of the crops produced.

9. That, if practicable, sewage utilisation by surface irrigation should be, for financial reasons, within the area of its own water-shed, and close to the populations producing the sewage; but it is not a necessity that it should be so, provided that it be applied to the land within a few hours—not more than twelve—of its discharge, and that here is no arrest of movement for more than very short periods before it is so utilised." ("Sewage Disposal Works," by W. Santo Crimp, pp. 143 and 144).

The most suitable soil for broad irrigation is that of a loamy nature overlying gravel. The most unsuitable are "stiff tenacious clays, peaty or boggy land, and certain conditions of coarse gravelly soils, which contain hard conglomerate layers often very dense and impervious." (Robinson). The serious objection to a clay soil appears, however, to have been overcome at

Leicester, the system adopted being to retreat the effluent from one piece of land upon a fresh piece until purification has been effected.

The area should be laid out in slopes varying from 1 in 20 to 1 in 120, according to the porosity of the soil.

The sewage on its arrival at the farm should be subjected to a rough straining or screening to remove the coarser matters in suspension. It is then conveyed by main carriers constructed of channel pipes or concrete, which are regulated by sluices, along contour lines over the farm.

The further distribution is carried on by means of channels or grips cut in the ground with the spade as required.

There are several methods of distributing sewage over the surface of the land, but all have the same object, viz. :—to regulate its application, facilitate aëration, and to avoid clogging or water logging.

The area required must necessarily vary with the quality of the land, but one acre for 100 persons is usually adopted as the standard.

Almost any form of agricultural produce can be reared upon sewage farms, and the selection must be made with a view to the demand of the local markets.

INTERMITTENT DOWNWARD FILTRATION

"Means the concentration of sewage at short intervals, on an area of specially chosen ground, as small as will absorb and cleanse it, not excluding vegetation, but making the produce of secondary importance."

The large area of land required for broad irrigation calculated upon the unit of 100 persons per acre, renders this system, in most cases, impracticable. Experiments made under the direction of the Rivers Pollution Commissioners showed that the filtration area might be considerably reduced when the sewage was applied intermittently to suitable soil deeply drained.

When a quantity of liquid is poured upon a well-drained porous soil, it sinks down until it reaches the drains, sucking the air after it and thoroughly aërating the pores. It has been already said that nitrifying organisms are dependent upon the presence of air, and that in consequence they are only to be found close to the surface of ordinary soil. The organisms extend to a greater depth in a porous than in a close soil, owing to the greater accessibility of the air, and with proper aëration there is no reason why their range should not be practically indefinite.

While in broad irrigation the sewage passes laterally over the surface and through the uppermost layer of the soil, in intermittent filtration it passes vertically downwards through a natural or specially prepared porous stratum to drains laid underneath.

In intermittent filtration the land is laid out in level plots, and under-drained with porous pipes at a depth of about 6 ft. These drains are carried to the effluent outfall. As in the case of broad irrigation, the crude sewage should be strained before being applied to the filtration area.

The area requisite for sewage purification by this process must necessarily depend upon the suitability of the soil and the efficiency of the drainage, and has been variously estimated. The Rivers Pollution Commissioners assumed a unit of 2,000 persons per acre.

This calculation was, however, based upon experiments with artificial filters, and is far too high in practice. The unit now generally adopted is 1,000 persons per acre.

When the filtration is preceded by chemical precipitation a much smaller area will usually suffice. Dr. Tidy considers that 5,000 to 7,000 persons per acre may be permitted in this case.

The sewage is distributed over the prepared land by means of carriers and grips, and the soil is raised in ridges for cultivation. The application of the sewage to each plot is intermittent—the periods of application and rest varying with the circumstances.

The principal crops are osiers and rye-grass, and occasionally mangolds, cabbages, &c.

The success of intermittent filtration naturally directed attention to artificial filters composed of gravel, sand, coke, and such substances as "polarite," "magnetone," &c.

Mr. W. J. Dibbin's experiments made for the London County Council, and described in a report dated September, 1895, conclusively prove the efficiency of such filters, and Mr. Dibden concludes that "the experiments, taken as a whole, show that sewage, especially if previously clarified by precipitation, may be purified to any desired degree, the actual amount of purification depending upon (1) the length of time during which the effluent is allowed to remain in contact with the filter, and (2) the length of time allowed for aëration. Mr. Dibdin found no special virtue in patented filtering materials, and stated that the polarite filter excelled the coke breeze only in appearance, the actual purification not being quite so much, while the cost is prohibitive.

In a paper read by Dr. G. Reid before the Sanitary Institute on August 1, 1895, he says:—"As regards artificial filtration, I think it is pretty generally admitted now that such substances as polarite and magnetone do not possess any specific power of disintegrating sewage by some mystic process, but that they act merely as air carriers, and so contribute to the growth and activity of the nitrifying organisms which, with proper use, develop in their interstices."—"Journal of the Sanitary Institute," vol. xvi., Part III., page 373.

The action of artificial filters has been the subject of very thorough investigation by the State Board of Health of Massachusetts, and Messrs. S. R. Lowcock, Colonel George Waring, and others, and amongst the various points experimented upon, that of artificially aërating the filter has produced considerable interest.

The following summary of conclusions derived from these experiments was given by Sir Douglas Galton in a paper read before the Sanitary Institute on December 11, 1895:—

"1. The suspended matters of sewers (sludge) can be mechanically withheld by straining slowly through suitable material.

2. The filth accumulated by this straining material can be destroyed, and the straining medium restored to a clean condition by mere aëration.

3. The successive alternate operation of fouling and cleansing can be carried on indefinitely without renewal of the straining material.

4. The purification obtained by this straining process practically equals that accomplished by chemical precipitation, and is sufficient to admit of discharge into any considerable body of water not used as a source of domestic supply, or for manufacturing purposes requiring great purity.

5. Such filters can be maintained in constant and efficient operation by suitable aëration.

6. The erection of a plant capable of purifying large volumes of sewage upon a relatively small area calls for no costly construction. Repairs and renewals are merely nominal. The attendance required is but slight. There is no outlay for chemicals, &c. The only expenses of mechanical operation is the driving of the blower or air-compressor.

7. The process admits of wide variation in the selection of filtering materials, and nearly every community can find, in its local resources, something suitable for the purpose." "Journal of the Sanitary Institute," vol. xvii. Part I.

OBITUARY.

Mr. W. Best.—On the 9th inst. Dr. George Danford Thomas held an inquest at the St. Giles Coroner's Court, London, respecting the death of William Best, aged 64 years, an architect and surveyor, lately residing at 102, Manchester-road, Bolton, who died suddenly at 65, Torrington-square, Bloomsbury, on Friday morning last week. Dr. Richard Paramore said he made a post-mortem examination of the body of the deceased, and found the heart was much enlarged, weighing twice the normal weight. He had no doubt that death was from syncope from heart disease. The jury returned a verdict in accordance with the medical evidence.

GENERAL BUILDING NEWS.

Re-opening of Box Parish Church. — The work of renovation at the Parish Church, Box, which was commenced a few months ago, have advanced sufficiently to enable the edifice to be re-opened for worship on All Saints' day. Mr. Harold Brakspear, architect, of Corsham, was consulted, and his plans for the restoration were ultimately adopted. The general contract was given to Messrs. Downing & Rudman, of Chippenham. The work has included the removal of all the old galleries. All the old high pews have disappeared and are to give place to more commodious ones in pitch pine. The floors throughout have been lowered 12 inches, and the whole surface has been covered with a solid bed of concrete, and with wood blocks in the nave and aisles. The old walls have been stripped of the modern plaster, and this has revealed some interesting features. The first being a recessed wall tomb in the Haselbury aisle, which was first mutilated, but the whole of the stones forming the arch were found built into the recess and are now replaced. Next to this on the east wall is another recess, doubtless for a reredos, consisting of a richly moulded pointed segmental arch resting on moulded caps, detached columns and bases in each jamb. The latter were much mutilated, but have been repaired and new columns restored in place of the old ones which were missing. The doorway on to the rood loft has been uncovered. The old three-decker of the beginning of this century has been replaced by a stone pulpit, and the clergy-seats, lectern, and choir stalls, which are to be under the tower, are to be in English oak with open traceried fronts. The chancel has been altered by the erection of a stone reredos considerably westward of the east wall, and the space so gained will be utilised as vestry. The large monument on the north wall has been removed and re-erected in the south aisle, so as to open the three-light window, of fifteenth century date, which it entirely blocked up. The tracery and mullions of the window had all been removed, but from the fragments which came out of the blocking up, the present window has been completely restored.

Cookery Centre, Board Schools, Gravesend.—A new cookery centre and board-room in Manor-road, Gravesend, have just been completed. The measurements of the main kitchen are 24 ft. 6 in. by 23 ft. 4 in. It is fitted up with desks, and affords accommodation for fifty-six children. The scullery opens off the kitchen. In the yard at the rear are the customary offices. The first floor is devoted to the offices of the Board. The board-room is 23 ft. 4 in. by 19 ft. The committee-room (13 ft. 6 in. by 17 ft.) opens out to the landing and into the board-room. The work has been carried out under the supervision of Mr. William Tuffee, from the designs of Mr. E. J. Bennett, of London and Gravesend.

Church House, Tring.—A new Church House at Tring was recently opened by the Bishop of St. Albans. The new building is situate in the Western-road, near Griffin's-lane. The building, which has been erected by Mr. H. Fincher, Western-road, from plans designed by Mr. W. Huckvale, architect, of Tring, is a red brick structure, with stone dressings in front and mullion windows. In the basement are two store rooms, a kitchen, and gymnasium. On the ground-floor is the assembly-room, 45 ft. by 27 ft., and there are two retiring-rooms.

Cycle Factory, Coventry.—Plans for a new factory on the Park-side, Coventry, were submitted recently by the Beeston Tyre Company to the General Works Committee of the Corporation. It is proposed to erect premises with a 90-ft. frontage, having the offices two or three stories in height. Mr. E. J. Purnell, jun., is the architect.

Restoration of Gussage St. Michael Church.—The Bishop of Salisbury has just re-opened the little church at Gussage St. Michael, which has recently undergone restoration and repair under the superintendence of Mr. C. E. Ponting, Diocesan Surveyor.

Renovation of Stokesley Church, Yorkshire.—The Parish Church of Stokesley, Yorks, after undergoing repairs and thorough renovation, was reopened on the 28th ult. by the Lord Bishop of Hull. The work has been carried out under the superintendence of Messrs. R. Lofthouse & Son, architects, Middlesbrough.

Wesleyan Methodist Chapel, Barry.—It has been decided to erect a permanent chapel for the Wesleyan Methodist Church at Barry. The architects of the new building are Messrs. J. P. Jones, Richards, & Budgen, Cardiff.

Institute, Aintree.—On the 3rd inst. the Lord Mayor of Liverpool opened the new institute and café at Aintree. The building stands at the junction of Longmoor-lane and Warbreck Moor-road. The ground floor has a large café, also billiard room for two tables, lecture room, and class rooms. The first floor has a second billiard room for two tables, and the main floor of the public hall is 64 ft. by 40 ft. The hall, with balconies and galleries, will seat about 700 persons. A large stage, with all the usual accessories, is provided, and there is a caretaker's residence, together with stables. The buildings have been constructed of Ruabon bricks, with Halifax stone dressings, and the roofs are covered with red Ruabon tiles. The total cost, including the land, will be about 8,000*l*. Mr. F. W. Dixon, of Manchester, was the architect. An illustration of the building appeared in our issue for March 7, this year.

Board Schools, Sedgley, Staffordshire.—The memorial stone of the new Board schools in course of erection in Bilston-street, Sedgley, was laid recently. The premises are being constructed in two blocks—one for the boys and girls, and the other for the infants. The accommodation is for 910 children, and the contract price is 5,950*l*. Mr. A. P. Brevitt is the architect, Mr. T. Jones the builder, and Mr. Dews is the clerk of the works.

Workmen's Dwellings, Wooler, Northumberland.—Eight workmen's cottages are about to be erected on Fenter-hill, Wooler. They are to be two stories in height. The plans for the cottages have been prepared by Mr. James Stevenson, architect, Berwick.

Enlargement of the Northallerton Gas Works.—The Northallerton Consumers' Gas Company, Limited, have just completed some alterations at their gas works at Northallerton, having erected new carbonising plant, which has been fitted up on the generating principle by Messrs. J. Welsh &

Sons, of Halifax. The new building has been designed by Mr. Wm. Bell, architect, of Northallerton. The company have laid down a new annular condenser by Messrs. Clayton & Company, of Leeds.

WESLEYAN CHAPEL, CARDIFF.—A meeting of the Building Committee of the Albany-road Wesleyan Chapel, Cardiff, was held recently, and it was decided to at once proceed with the permanent structure. Messrs. J. P. Jones, Richards, & Budgen were appointed the architects.

RENOVATION OF SECOND RANDALSTOWN PRESBYTERIAN CHURCH, CO. ANTRIM.—This church was reopened on the 25th ult., after being closed for some time while undergoing renovation. The plans for the work were prepared by Mr. S. K. Kirker, C.E., Belfast. The contractors were Messrs. H. M'Manus & Co., Randalstown.

SCHOOL EXTENSION, ABERDEEN.—The St. Paul-street School, Aberdeen, is now being enlarged. The architects for the extensions are Messrs. D. & J. R. M'Millan. The contractors are: mason work, George Duguid; carpenter, Henry & Keith; slater, James Wilson; plasterer, James Stephen & Son; plumber, Thom & Strachan; painter, J. & S. Fyfe; ironfounder, John Grant; heating engineer, Robert Tindall. The total contract price is 6,953*l.*

NEW GASWORKS, ROTHESAY, BUTE.—On the 30th ult. Provost Milloy opened the new gasworks on the site of the old Broadcroft Mills. The roof of the retort-house is in three spans, the centre one being 58 ft. wide, and the two side ones 21 ft. each. Behind the retort-house is the boiler and engine-house. The contractors for the various portions of the work were:—Gas-holder tank—Mr. George Halliday, Rothesay, mason work; Mr. William Hunter, Rothesay, joiner; Mr. William Lauder, Rothesay, iron roof and slater work. For retort-house—Messrs. Clayton & Sons, Leeds. Retort bench and chimney stalk—Mr. Hamilton, of Hamilton. Condensers, scrubbers, and purifiers, &c.—The Whessoe Foundry Company, Darlington. Station meter—R. Laidlaw & Son, Glasgow. Governor—W. B. Cowan & Co., Edinburgh. Boilers—Messrs. A. Nicholson & Son, Glasgow. The engineer was Mr. A. Gillespie, Glasgow.

ALTERATIONS AT THE SHIREHALL, GLOUCESTER.—The institution of the County Council, in lieu of the previous magisterial administration, involved a large increase in the amount of work to be done; so much so that the staff and offices of the Clerk of the Peace were found to be totally inadequate. It was therefore determined in 1893 that proper provision should be made to meet the necessities of the case. Some years previously the county had acquired, by purchase, the whole of the property on the west side of the Shirehall. By the removal of a portion of these premises and the old witnesses waiting-rooms, sufficient space was found for a new Council Chamber, with Councillors' lobby and cloak-room, Chairman's private room, and a waiting-room on the north side, and new Grand Jury room, witnesses hall and waiting-room, and Treasurer's pay office on the south side of it. The old Grand Jury Room will be used as an office for the Clerk of Indictments and as a committee-room. The offices for the Clerk of the Peace have been extended northwards, and include a strong-room. The old Quarter Sessions Room has been dismantled and converted into offices for the County Surveyor and his staff. A glazed screen with swing doors has been fixed at the north end of the entrance hall, and the lighting of the entrance hall has been improved by the introduction of borrowed lights on either side. Boiler-house, engine-house, and storage-room, or workshops for county use are provided under the new Council Chamber and the adjacent buildings. The Assize Courts, the Council Chamber and the Assembly-room have been warmed and ventilated by Messrs. Ashwell & Nesbit. The new Council Chamber, which is 48 ft. long by 37 ft. wide and 22 ft. high, is lighted principally by ceiling lights; the entrances for Councillors, public, and officials are at three corners of the room. The walls and ceiling are covered with fibrous plaster decorations. The floor of the Council Chamber is fireproof, formed of oak blocks laid herring-bone fashion on concrete, supported on steel girders and stancheons. The buildings were erected by Mr. H. A. Forse, of Bristol, from designs by Mr. Medland, the County Architect, and under the supervision of Mr. Wm. Wiggall, clerk of works. The plaster decorations and oak chimney piece in the Council Chamber were executed by Mr. H. Frith.

TRADES COUNCIL BUILDINGS, ABERDEEN.—The new buildings of the Trades Council, Aberdeen, are on the point of completion. The present premises of the Trades Council are on the west side of Belmont-street, and the new buildings are projected behind the present buildings, towards the Denburn Valley. The new buildings are distinct from the present ones, though inter-communication is provided, and the main entrance is in Belmont-street adjoining these present premises, which will continue to be used as committee rooms. The architectural features of the western elevation are the large window of the main hall and corner turrets. The main entrance is formed by a gateway, with elliptical arch, on which is inscribed the title "Trades Hall." This leads into a large tiled corridor 12 ft. wide, and between 60 ft. and 70 ft. long, leading directly into the main hall. Half way along the corridor, however, a stair-way leads down to the lower floor, where there are ten committee rooms, provided on either side of a corridor running longitudinally along the build-ing, and at the western end of which is a small hall 42 ft. long by 25 ft. wide, and 16 ft. high, with capacity for a meeting of about 150 people. At the western end of the hall is a platform, with ante-room on each side. Four of the committee-rooms are convertible into two, by the use of fold-ing partitions. Lavatories are provided for this floor near the foot of the staircase, and, like the corridors, are laid with tiles. On a basement floor, below the lower hall, are the furnace-rooms, cellars, and other store-rooms. From the main corridor the visitor passes into the main hall, almost 100 ft. long by 43 ft. wide, and 34 ft. high, capable of seating an audience of from 1,200 to 1,500. At the eastern end, above the entrance, is a small gallery, and at the opposite end is the platform, flanked by retiring-rooms. The buildings will be heated by hot-water, and the electric light will be pro-vided. The cost of the new buildings will be close on 5,000*l.* Messrs. Ellis & Wilson are the architects.

BOARD SCHOOL, ARNOLD, NOTTS.—On the 29th ult. the new girls' school in Church-drive, Arnold, which has been built at a cost of over 4,000*l.*, was opened by Sir Charles Seely, Bart. The school was designed by Mr. W. H. Higgin-bottom, of Nottingham. The main entrance is from Church-drive, and leads direct into the central hall, which is 61 ft. long and 25 ft. wide. Additional entrances and exits are also provided at the opposite end of the building. The class-rooms, seven in number, are arranged at either side of the central hall, each being 25 ft. by 24 ft., and accommodating sixty scholars. Part of the floor in each class-room is made sloping. Dual desks are used. The cookery room is 28 ft. by 23 ft., and has a gallery for demonstration, and also a scullery 22 ft. by 10 ft., which is divided from the same by a sliding partition. Cloakrooms with lavatories are provided at each end of the hall. The mistress's room is arranged over the back cloakroom. The building externally is faced with local red bricks and Derbyshire stone dressings, and the roof is covered with red tiles. The contractors were:—Mr. J. Herring (bricklayer), Mr. A. Allcock (joiner), Mr. W. Greaves (plumber), all of Arnold, and Mr. Stanley (painter), of Hyson Green.

CATHOLIC CHURCH, PETERBOROUGH. — The opening of the new Catholic Church of All Souls, Peterborough, took place recently. The church has been erected between Geneva-street and Fitzwilliam-street, abutting on the Park-road. Mr. Leonard Stokes, of Westminster, was the architect. Owing to limited funds it has not been found practicable to carry out the complete scheme, which is to include the lengthening of the present nave at the east end. The chancel measures 20 ft. long, and nave 52 ft. long by 33 ft. wide, the latter providing accommo-dation for about 200 worshippers. The nave is flanked by arcades cut off by stone columns and arches, with small transepts on the north and south, and convenient sacristies for the priests and acolytes. In the south transept there is a gallery for the choir, and this also contains the organ removed from the chapel in Queen-street. The church is lighted by means of three small two-light windows on the north and south. A finish is given to the appearance of the church by a turret, and this contains the bell of the former chapel in Queen-street. The presbytery runs at right angles to the church. Mr. Hammond was the builder.

FACTORY PREMISES, WRITTLE, ESSEX.—After the fire which occurred at Messrs. Crompton & Co.'s factory at Chelmsford, in November last year, the directors decided merely to restore temporarily the old workshops and to endeavour to obtain a site for the new factory in a more convenient position. A site of about nine acres was secured in Writtle parish, close to the Great Eastern Railway, and the new factory is now rapidly being constructed there. The buildings will consist of factory and workshops and a separate block of offices facing the Writtle-road and immediately opposite the entrance to the cemetery. The factory will be entirely on the ground floor, and will comprise a block of main shops 260 ft. by 150 ft., shut off from which, by iron doors, is a store, 140 ft. by 20 ft. The boiler economiser house measures, with the coal bunkers, 70 ft. by 50 ft. All the buildings are arranged so that they can be easily extended if required. The main shop is divided into eight bays, all of which are provided with overhead travelling cranes, many of these being driven electrically. Two and a half bays will be devoted to armature work, two to the smaller machine tools, one will contain the large machine tools, and will be used as the erecting shop, one and a half bays will be devoted to testing and general repairs, and one bay will comprise the finished work stores and tool shop. The roofs are constructed of steel. A railway siding in connexion with the Great Eastern Railway has already been laid on to the site. The water supply will be from tube wells sunk on the site, and there will be a storage reservoir on the ground holding 160,000 gallons. The office block measures 156 ft. by 32 ft., and is faced with picked stocks and red brick dressings. It contains drawing office, 41 ft. by 30 ft.; general office, 31 ft. by 30 ft., with top lights; a fireproof room for books, drawings, and patterns, 31 ft. by 11 ft.; with managers' rooms, directors' room, waiting-room, &c., the whole being heated by Perkins' hot-water system. The factory buildings were mainly designed by Mr. Brunton, the works manager, and the office block by Mr. John Slater, architect, of London, who also acts as consulting architect for the whole of the work. The contractors are, for the main factory buildings, Mr. J. Bray, of Yarmouth; for the chimney shaft and offices, Mr. Frank Johnson, of Chelmsford; and for the iron and steel work, Messrs. Dorman, Long, & Co. Mr. H. F. Sheppard is clerk of the works.

BUSINESS PREMISES, SHEFFIELD.—A good deal of curiosity has been felt as to the kind of structure that could possibly be erected on the small plot of land at the end of George-street, Sheffield, recently sold for 1,750*l.* Plans have now been prepared, and the work of getting out the foundations has been commenced. On the ground floor there is to be a sale shop, with basement, containing the usual offices. The first floor is to be used as a show case. Above these are four tiers of advertisement spaces, each about 7 ft. long by 3 ft. high. These will be illuminated by electric lamps of changing colours. The structure will be mainly of iron and glass, and considering the exigencies of the site, it will be fairly ornamental. It will be high enough to hide from view the end of the adjoining property in George-street. Mr. George Webster, of Sheffield, is the contractor. The ironwork is being supplied and erected by Messrs. George Wright & Co., of Burton Wear Works, Rotherham. The electric light installation is by the Sheffield Electric Light Com-pany. The architect is Mr. Herbert W. Lockwood. —*Sheffield Telegraph.*

SCHOOLS, HUDDERSFIELD.—The corner stones of the new Church Sunday and day schools in con-nection with the parish of Rashcliffe, Huddersfield, were laid recently. The school in course of erec-tion is situate on a site in St. Stephen's-road, opposite St. Stephen's Church, and will be Gothic in design, in consonance with the church. It will contain a central hall 31 ft. 6 in. by 24 ft., and two class-rooms providing accommodation for thirty children each, and a babies' room for fifty children, whilst seventy-five places are provided in the central hall, making the total into 185 places. The divisions between class-rooms and hall will be movable glazed partitions. There is also a cloak-room and lavatory; the principal entrance will be from Bland-street. The school will be heated with hot water on the low-pressure system. The accepted tenders amount to the sum of 1,510*l.* The plans have been prepared by Mr. J. Berry, Huddersfield, and the works are being carried out by the follow-ing contractors, viz.:—Masons, Messrs. B. Graham & Sons; joiners, Messrs. Hampshire & Armitage; plumbers, Messrs. Sanderson Bros.; plasterers and slaters, Messrs. T. Longbottom & Sons; painters, Messrs. Haigh & Shaw; concreter and stone macadam asphalter, Mr. John Cooke; heating engineers, Messrs. Calvert & Co.

INTERMEDIATE SCHOOLS, LLANELLY. — The foundation stone of the Intermediate Schools at Llanelly was laid recently. The schools are to be erected on a site close to the hospital, from the designs and under the superintendence of Mr. W. H. Dashwood Caple, Cardiff, the contract being let to Mr. Broom, contractor, Llandovery. Adjoining the general assembly hall, on the right and left respectively, are the ordinary class-rooms at right angles to the main front, and at the extreme right and left respectively are arranged blocks of buildings forming the technical departments of the schools. The boys will be provided with physical and chemical laboratories, preparation and balance rooms, and a workshop for instruction in working wood and metal. The girls will have a music-room, with piano chambers, a specially adapted cookery kitchen, with a large scullery adjoining it, and a laundry. Besides these various rooms, the boys and girls will have an art studio and large gymnasium. The buildings are being built of brick, faced exter-nally with pressed Cwmbran bricks, relieved with Corsham Down stone and terra cotta. The floors throughout are to be wood block, and the roofs covered with best green slates, with red tile ridge crestings. The buildings and boundary walls will cost 5,000*l.*

CLUB AND INSTITUTE, CRIPPLEGATE.—On the 4th inst. a new Club and Institute was opened at Cripplegate. The building is situated between the corners where Golden-lane and Brackley-street join Cripplegate-street. The architect was Mr. Sidney Smith, Adelphi, and his designs were carried out by Messrs. G. & H. Bywaters.

REBUILDING OF THE RED COAT SCHOOLS, MILE END.—This building has just been entirely reconstructed according to the designs of Mr. Alfred Cox. Its main feature is a hall on the ground floor. The floor above is occupied by the girls' school, divided into three classrooms, a division also followed out in the boys' school, form-ing the third story. The adjacent infants' school has been extended.

TURKISH BATHS, EXETER.—A Company has been formed for the purpose of providing Exeter with Turkish baths. A site has been secured at the top of Northernhay-street. Messrs. Ralling & Tohar are the architects. The upper part of the buildings will consist of bedrooms, forming an

annexe to the Rougemont Hotel, the whole of the basement to be constructed as a bath.

St. Alkmond's Church and the Wightman Memorial, Shrewsbury.—Four new pinnacles and a parapet have just been added to the tower of St. Alkmond's Church as a memorial. The pinnacles are 20 ft. high above the line of the tower. At each angle of the tower is an emblem representing one of the four Evangelists. The carving has been carried out by Mr. Bridgeman, of Lichfield, Mr. E. Lloyd Oswell, of Shrewsbury, being the architect.

Chancel Screen, Tackley Church, Oxford.—The Parish Church of St. Nicholas, Tackley, Oxford, has just been enriched by a new oak chancel screen, designed by Mr. Garner. The screen is of English oak. It is in three bays, the solid portion on each side, as well as the gates, being panelled and ornamented with tracery.

New Theatre Royal, Dublin.—The Leinster Hall, Dublin, is to be converted into a theatre. The plans for the new theatre have been lodged with the City Architect, Mr. M'Carthy. Mr. Frank Matcham is the architect engaged.

Hall, Christ Church, Rathgar, Belfast.—A large hall, including caretaker's apartments and committee-rooms, has just been erected by the congregation of Rathgar in Rathmines, to take the place of the old schoolhouse. The architect is Mr. Beator, and the builder, Mr. Crichton.

SANITARY AND ENGINEERING NEWS.

Railway Bridge, Peterborough.—An engineering work of considerable interest was witnessed at Peterborough on the 25th ult., when the G.N.R. bridge over the Midland and Great Eastern lines at Peterborough was removed in thirteen minutes and a new bridge put in its place in thirty-five minutes. The old bridge was made of cast-iron, and the new bridge is of steel. The alteration was considered necessary in consequence of the increased weights of rolling-stock passing over the bridge. The men started to work at 6 o'clock on Sunday morning, and the whole work was completed by 11.33, when a train passed over the new bridge, which, however, had been previously tested by a ballast train. The total weight of the old bridge, including columns and ballast, was 367 tons, and the new steel bridge weighs 330 tons. The preparations for making the alteration have been in progress for the last twelve months. The old bridge was raised by hydraulic power, and then drawn away by three crabs, with eight men to each, the work being accomplished in thirteen minutes. The new bridge, which had been placed in readiness, was then in a similar way brought into position in thirty-five minutes. The work was carried out under the supervision of Mr. T. R. Johnson.—*Lincoln Mercury.*

Brighton Chain Pier.—At the instigation of the Borough Engineer of Brighton, the Chain Pier has been closed, in consequence of its having been rendered unsafe by the heavy gales that recently prevailed upon the coast. The doom of the pier was foreshadowed seven years ago, when the scheme was floated for the building of the Marine Palace and Pier from a point just opposite the entrance to the Aquarium. At that time it was contemplated that long ere this the Chain Pier would have vanished. One of the conditions enforced by the Board of Trade was that, as soon as the new pier was completed, the old structure should be removed; and the Chain Pier was purchased by the new company with that object in view. Various difficulties have, however, interfered with the completion of the new pier. Meanwhile gale after gale has beaten round the old Chain Pier, which has practically been left to fall into a state of ruin. For some time the piles at the head had shown a considerable deviation from the perpendicular, the incline, consequent probably upon the prevalence of south-westerly winds, being in an eastward direction. This settling over to the east, coupled with a movement in the direction of the shore on the part of the piles supporting the northern part of the head of the pier, was considerably accentuated by the recent heavy gales and high tides. When the Borough Engineer, Mr. F. J. C. May, plumbed it recently, he found that at the head the pier was no less than 6 ft. 9 in. out of the perpendicular, and that several of the main piles were broken asunder, and that the main braces were missing. Consequently Mr. May considered it his duty to send to the Secretary of the new Pier Company official notice that the Chain Pier was unsafe and ought to be closed to the public.

Sewage Works, Ripon.—The Mayor of Ripon (the Marquis of Ripon, K.G.) performed the ceremony on the 20th ult. of opening the Ripon Sewage Disposal Works. These works have been constructed by the Corporation on Fisher Green, a mile east of the city, at the confluence of the rivers Ure and Skell, with a view to the purification of the sewage before it is discharged into the river Ure. The scheme now completed covers 30 acres of land, only 12 acres of which have at present been laid out for sewage treatment. The sewage has been diverted from the rivers Skell and Ure by laying intercepting sewers. The land is laid out in level plots, with carriers and distributing channels. The subsoil drains for carrying off the clarified water are laid at a depth of 6 ft. below the surface. The population provided for when the whole area is laid out is 10,000 persons. The expenditure upon the scheme so far, including portions completed or in progress, has been about 8,300*l.*, and a further amount of about 4,000*l.* has been paid for land and incidental expenses, making the total outlay up to the present time 12,300*l.* About 7,000*l.* of this expenditure has been intrusted to Messrs. A. Braithwaite & Co., contractors, Leeds. Mr. H. A. Johnson is the engineer.

Street Improvement, Swansea. — The Swansea Borough Surveyor, has just furnished the Corporation with plans and estimates showing four alternative schemes for widening Castle-street, ranging in cost from 40,000*l.* to 200,000*l.* Mr. Bell makes a suggestion that the old east side of Castle Bailey-street, opposite Ben Evans & Co.'s premises, should be pulled down, leaving a roadway of 30 ft., and disclosing to public view part of the old castle.—*Western Mail.*

Drainage Scheme, Gloucester.—Major-Gen. Crozier, R.E., Local Government Board Inspector, held an inquiry at Gloucester Workhouse recently into the application of the Gloucester Rural District Council for approval of the constitution of a special drainage district, to consist of parts of the contributory parishes of Barnwood, Hucclecote, Longford, and Wotton St. Mary Without; and for sanction to borrow 10,000*l.* for the purposes of sewerage and sewage disposal for the special drainage district. It was explained that it was proposed to adopt the system known as universal sewage purification, and to discharge the purified effluent into the Severn just above Gloucester.

Sewage Works, Wellington, near Birmingham. — Major-General H. D. Crozier, Local Government Board Inspector, attended at the District Council Rooms on the 3rd inst., for the purpose of holding an inquiry into an application by the Council to borrow 9,307*l.* to carry out sewage works. The Council was represented by Mr. J. W. Littlewood (clerk) and Mr. Stooke, C.E., engineer for the proposed works. Mr. Littlewood explained that the Council were compelled to take action, as legal proceedings had been commenced by Mr. Eyton to obtain an injunction against them for polluting Eyton Brook.

Bridge, Bonhill, Dumbarton.—At a meeting of the County Road Board, held in Dumbarton recently, the question of the new bridge for Bonhill was discussed. Some talk took place over the appointment of an engineer for the new bridge, and ultimately Lord Overtoun moved that the appointment be given to Mr. Crouch, C.E., Glasgow. Mr. F. C. Buchanan seconded, and the motion was unanimously agreed to. Mr. Archd. Wilson, County Road Surveyor, was associated with Mr. Crouch in the matter.

Water Supply, Danbury, Essex.—Mr. Walter A. Ducat, an Inspector of the Local Government Board, recently held an inquiry at the Griffin Inn, Danbury, to consider an application by the Chelmsford Rural District Council to borrow 4,000*l.* to carry out a scheme of water supply for the parishes of Runwell, Woodham Ferris, and Rettendon. Among those present were the Clerk (Mr. W. W. Duffield), the Medical Officer (Dr. J. C. Thresh), and the Surveyor (Mr. I. C. Smith).

Sewer Outfall, Lowestoft. — Mr. George Waller Willcocks, M.Inst.C.E., of the Local Government Board, attended at the Town Hall, Lowestoft, recently, to hold an inquiry into the application of the Lowestoft Town Council to borrow the sum of 7,000*l.* for making a new sewer outfall for the town. The Town Clerk said the application was made for a loan of 7,000*l.* for the construction of a sewer outfall near the Ness Point, 120 yards south of the existing outfall. The tender from Messrs. Cook & Co., contractors, of Battersea, was for 6,547*l.* and contingencies 453*l.* Mr. G. H. Hamby, the Surveyor, subsequently described the plans for the proposed work.

Vauxhall (Temporary) Bridge.—During the past month the walings of piers Nos. 2, 3, 8, and 9 have been completely fixed, and those of piers Nos. 4 and 7 nearly so; the excavation and concrete for the formation of the northern approach to the bridge are being advanced; 300 cubic yards of filling-in have been supplied, and the excavation for the abutment of the bridge on the southern approach commenced; but the general progress made by the Works Department of the London County Council has been rather slow owing to the late wet weather. The estimated cost of the works is 15,057*l.* 9*s.* 3*d.*

Public Improvement, Clifton.—On the 5th inst. Colonel Luard, Local Government Board Inspector, held an inquiry at Clifton relative to the Barton Rural Council's application to borrow 2,300*l.* for improving Rake-lane and Billy-lane, Clifton. Mr. Whitworth, clerk, said the population was 3,000, and the assessable value nearly 32,000*l.* Mr. Hooley, engineer, detailed the proposed improvements. The inspector afterwards visited the roads.

Local Sewers in London.—The Main Drainage Committee of the London County Council have sanctioned, subject to conditions recommended by the Engineer, the construction of local sewers as follows:—Fulham: 886 ft. of 12-in. pipe sewer in Townmead-road. Hampstead: 502 ft. of 12-inch and 269 ft. of 9-in. pipe sewers in Heathurst-road, The Keats estate, South End-road. Lewisham: 410 ft. of 9-in. and 500 ft. of 12-in. pipe sewers in Ballina-street and Honor Oak Park, Woolmore estate, Brockley. Poplar: 565 ft. of 9-in. pipe sewer in Bygrove-street, Grundy-street. Wandsworth: 310 ft. of 15-in. pipe and concrete sewer in Warple-road, Putney. St. Marylebone: 380 ft. of 12-in. and 225 ft. of 15-in. pipe sewers between Alpha-place and Park-road, St. John's Wood, for the Manchester, Sheffield, and Lincolnshire Railway.

ELECTRIC LIGHTING NEWS.

Electric Lighting, Fareham.—Mr. F. H. Tulloch, M.Inst.C.E., conducted an inquiry recently on behalf of the Local Government Board, at the office of the Urban District Council, into the application of the Council for sanction to a proposed loan of 1,900*l.* for purposes of electric lighting, and 415*l.* for works of paving in West-street.

Electric Lighting, Wallasey.—At the Public Offices, Egremont, recently, Mr. Rienzi Walton, Local Government Board Inspector, held an inquiry regarding the application of the Wallasey District Council for power to borrow 17,500*l.* for electric lighting purposes and the provision of a fire station at New Brighton.

Electric Light, Bath.—On the 30th ult., Mr. F. H. Tulloch, Inspector of the Local Government Board, sat for four hours at the Bath Guildhall, where he held an inquiry into the application of the Urban Sanitary Authority for power to borrow 58,000*l.* for purposes of electric lighting. The principal witness for the Authority was the electrical expert who has been advising the Electric Light Committee, Mr. R. Hammond.

Electric Lighting, West Ham.—Mr. G. W. Wilcox, Local Government Board Inspector, held an inquiry at the Stratford Town Hall recently respecting the application of the Town Council for sanction to borrow 53,723*l.* for works of street improvement, 50,000*l.* for electric lighting, and 4,860*l.* for the lunatic asylum. It was estimated that 15,000 lamps would be required for the public lighting.

Electricity in a Dublin Church.—St. Francis Xavier's Church, Upper Gardiner-street, Dublin, is being fitted up with an electric light installation. The cellars at the rear of the church are being adapted and utilised for engine, dynamo, and battery rooms. The motive power will be supplied by a 10-h.p. (nominal) gas engine. The electrical storage battery consists of accumulators which will be capable, when fully charged, of supplying 100 lamps of 16-candle power each for ten hours. Messrs. Edmundson & Co., electrical engineers, are carrying out the installation.

Electric Lighting at Hampstead. — The Lighting Committee of the Hampstead Vestry has decided to recommend the Vestry to pass a resolution in favour of lighting High-street and Haverstock-hill to the boundary of St. Pancras Parish with electric arc lamps.

Proposed Electric Lighting of Stirling.—Professor Kennedy and Councillor Mackenzie, Edinburgh, visited Stirling recently in connection with the proposed municipal electric light installation there. After examining the principal streets, they attended a meeting of the Town Council, where Professor Kennedy and Mr. Mackenzie put their views before the members, who approved generally the proposals made, and instructed Professor Kennedy to prepare a report on the whole question.

York and the Electric Light.—At a meeting of the Streets and Buildings Committee of the York Corporation on the 27th ult. the specification supplied by Professor Kennedy for the electric lighting of the city was discussed, and it was resolved, in accordance with the instructions of the Council, to at once advertise for tenders on the basis of that specification.

Electrical Department, Cardiff. — The Cardiff Lighting and Electrical Committee have adopted the minutes of the Sub-Committee recommending that the electric lighting works should be constituted a separate department, distinct from the department over which the Borough Engineer now has supervision.

Electric Lighting at Bury.—The opening of the new Corporation Electric Lighting Works, at Bury, took place on the 5th inst. The new works are situated at Croppers, Rochdale-road, and the station buildings occupy an area of 10,000 square feet.

STAINED GLASS AND DECORATION.

Decoration, Emmanuel Church, Leeds.—This church, after having been closed for some weeks for cleaning and decorating, was reopened on the 25th ult. The decoration consists mainly in a series of frescoes, which have been painted upon the walls of the chancel, nave, and south transept, by Messrs. Powell Brothers, of Leeds. The chief subjects on the chancel walls are "The Expulsion from Eden," "The Annunciation," and the "Adoration of the Magi." Upon the large space above the chancel arch is shown the Saviour, under the symbol of the Lamb, holding the banner of the Resurrection, and surrounded by a choir of angels adoring and playing musical instruments. On either side of this picture are life-size figures of the twelve apostles, these being carried up on both sides of the nave walls; and in

the clearstory, between the windows, a series of niches contain many representatives of the prophets and martyrs—there being in the clearstory alone twenty-five figures. In addition to these frescoes, Messrs. Powell were instructed to paint upon the tower roof the Hand of God in blessing, and angels bearing ribbons with the words "Holy, Holy, Holy" upon them, and upon the east side of the south transept a processional subject of Christ's entry into Jerusalem—this last measuring some 19 ft. by 7 ft., and the figures being nearly life-size. The whole work has been executed under the personal supervision of Mr. Henry Walker, architect, of Leeds.

WINDOWS, ST. ANDREW'S CHURCH, DERBY.—We understand that the Committee have selected the design by Messrs. F. Holt & Co., Warwick, out of those submitted, for filling the western windows of this church with stained glass, for which drawings were invited in the early part of the year. The subjects are from the "Benedicite," and will fill the entire range of lights and tracery.

WINDOW AND PORCH, BOTLEY CHURCH, HANTS.—At the Church of All Saints, Botley, a new porch has been erected at the western end, and a stained-glass window inserted. The porch is of Swanage stone, was designed by and built under the direction of Mr. T. G. Jackson, and extends the whole width of the church, having large oak doors on the western side and a smaller entrance at the north end. The window, also from a design by Mr. Jackson, has been placed in the west wall of the church, and is fitted with stained glass by Messrs. Clayton & Bell, of London. It is more than 11 ft. in width, and consists of two sections.

WINDOW, RED HALL CHAPEL, AUDENSHAW, LANCASHIRE. — A stained-glass window has just been unveiled in the front of the Red Hall Chapel, Audenshaw. The window is in three compartments, and is the work of Messrs. Joseph Bell & Sons, of Bristol.

MEMORIAL BUST, TECHNICAL SCHOOL, HALIFAX.—At the Halifax Technical Institute recently a memorial bust, erected to the memory of the late Mr. James W. Davis, was unveiled. The statue itself is by Mr. Stephenson, F.S.A., of Edinburgh, and is surrounded by freestone, designed by the architects of the building, Messrs. Jackson & Fox.

MURAL TABLETS, CHRIST CHURCH, MORNINGSIDE, EDINBURGH.—Two mural tablets have just been erected in Christ Church, Morningside, one to the memory of the late Dr. Bremner, and the other in remembrance of the late Mr. Alcock, organist. The former, designed by Mr. Hippolyte Blanc, and executed by Mr. Beveridge, is in white alabaster, with a green onyx border. The ornamentation is Gothic, the tablet being divided into a larger and a smaller panel by a pinnacle, which is also repeated at each side. The floral and other ornamentation is carved. The inscription is in raised letters.

FOREIGN.

FRANCE.—On Sunday last the monument erected to the memory of Watteau was inaugurated. It is by M. Gauquié, sculptor, and M. Guillaume, architect. It was to have been placed at Nogent-sur-Marne, but finally the Committee have decided upon erecting it in the Luxembourg Gardens, opposite the statue of Lesueur. —— By order of the Russian Government, M. Antokolsty, the sculptor, has made a model of a magnificent crown, which has been carried out in gold and enamel by the house of Falize, and placed on the tomb of President Carnot at the Panthéon, on the *Jour des Morts*. This crown, which measures one mètre in diameter, is fixed on a slab of pink marble. It is formed of branches of olive and myrtle and encloses two shields, which are surrounded by laurels. On one of the shields are placed the Russian Imperial arms, on the other an inscription in enamel.——A committee has been formed to decide upon the question of erecting a monument to Jules Simon. ——New cavalry barracks are soon to be commenced in the 15th Arrondissement, between the Rue de Dantzig and the Rue de Morillons; they will replace the Orsay barracks, which are to be pulled down to make way for the new Orleans railway station. —— The Government have decided that the Cour de Comptes, at present in the Palais Royal, shall be definitely transferred to a large palace which is to be built in the Rue Cambon, on the site of the Archives of the Ministère de Finances, by the side of the Church of the "Assomption."——The new Colonial school built by M. Adolphe Yvon, architect for the Colonial minister, has just been inaugurated. The façade, which is Moorish in style, faces the gardens of the Avenue de l'Observatoire, but the building will not be completed for some years.——An exhibition of the drawings and water-colour sketches which M. Lucien Magne (architect) has brought from his travels in Greece is to be arranged at the Musée de Sculpture Comparée, at the Trocadèro. ——The Duc d'Aumale, proprietor of the Chateau d'Amboise, has just presented to the Church of St. Denis d'Amboise a fine tomb in white marble, ornamented with a recumbent figure of a woman. The monument was found in the cellars of the chapel belonging to the chateau.——An interesting exhibition of *céramiques* by M. Lachenal is to be held in the Georges Petit Gallery.——An exhibition of artistic advertisements is to be held at Rheims.——The Parliamentary Committee of the Budget have given a favourable opinion regarding the construction of the maritime canal from Marseilles to the Rhone. It is now to be hoped that the works may be begun some time in the course of next year. The expense is calculated at eighty-seven millions of francs, and it is thought that the work will not be completed for eight or ten years.

CHICAGO.—Mr. John Mabbs, Engineer of the Chicago Board of Trade, proposes that a sea wall be built on a line with the intakes of the Chicago water supply in Lake Michigan, to keep the sewage of the city from the intakes, and incidentally to make a magnificent harbour. Mr. Mabbs says there is rock enough now along the drainage canal to make 12 miles of this sea wall 20 ft. wide on top, 110 ft. on the bottom, and 30 ft. deep. The plan assumes that the present Bridgeport pumping-station will maintain a current from the lake through the Chicago River until the drainage canal is completed.—*Engineering Record.*

NEW ORLEANS.—The architects of New Orleans were invited to meet in conference on October 13, regarding an improvement in city architecture. A preamble was adopted reciting that the existing practice in designing city buildings in New Orleans is not equal in its results to the practice in other cities of the United States, and resolutions were passed that all new architectural work should be open to competition under the supervision of a capable commission. A committee was appointed to ascertain the law governing the existing practice, and to confer with those who drafted the new city charter as to its intent in regard to city architecture.

RHODE ISLAND.—The corner-stone of the new Rhode Island State House, at Providence, was laid on the 15th ult. The edifice will be 123 ft. wide, 333 ft. long, and will have a dome 244 ft. above the ground. The rotunda will be 53 ft. in diameter and 149 ft. high. The stone to be used is Georgia white marble resting on foundation walls of pink granite. The contract price for the building is 1,500 000 dols. Messrs. McKim, Mead, & White, of New York City, are the architects.—*Engineering Record.*

NEW YORK.—Two interesting works by women sculptors, in bronze, have just been completed in New York. They are the statue of Admiral Stephen Hopkins, for the public square in Providence, and a group intended for the art exhibition at Chicago. Mrs Theodore Alice Ruggles Kitson, wife of Sculptor H. H. Kitson, was the creator of the Hopkins statue, and the group for Chicago, entitled "My Little Model," is by Miss Harriett R. Hyatt, of Cambridge, Mass.—*Architecture and Building.*

MISCELLANEOUS.

SOCIETY OF ARTS.—The opening meeting of the 143rd Session will be held on Wednesday evening, November 18, at 8 p.m., when an address will be delivered by Major-General Sir Owen Tudor Burne, K.C.S.I., C.I.E, Chairman of the Council, on the subject of "India, its Arts, Manufactures, and Commerce." At the subsequent meetings before Christmas, the following papers will be read:—"Recent Developments in Mechanical Road Carriages," by Mr. W. Worby Beaumont, M.Inst.C.E.; "The Teaching of Economics," by Mr. W. A. S. Hewins, M.A.; "Mining at Great Depths," by Mr. Bennett H. Brough, Assoc.R.S.M.; and "The Chamber Music of Purcell, Handel, and Bach" (with illustrations on the original instruments for which it was written), by Mr. Arnold Dolmetsch.

DRINKING FOUNTAIN, MIDDLESBROUGH.—A drinking fountain and marble bust of the late Mr. H. W. F. Bolckow, presented to the municipality of Middlesbrough by Sir Hugh Gilzean Reid, was unveiled recently in the Albert Park. The memorial, which has been placed about mid-way between the Linthorpe-road entrance and the large ornamental fountain in the centre of the park, is built of red sandstone, obtained from the neighbourhood of Edinburgh. It is about 6 ft. broad at the base, and rises to a height of about 11 ft. In the top half is a deep alcove, in which, upon a slightly raised pedestal, is placed the bust of Mr. H. W. F. Bolckow. The alcove is surmounted by a heavy cluster of leaves, while immediately below the bust is the inscription, "H. W. F. Bolckow," and the name of the sculptor, Mr. D. W. Stevenson. Underneath this is the drinking fountain, the water flowing from the mouth of a brass lion's head, and falling into a large sculptured bowl. On the back of the fountain is an inscription.

WHIPP'S SASH-WINDOW VENTILATOR.—This is an attempt to improve on the well-known method of ventilation by raising the lower sash of a window two or three inches, providing a window board to fill up the opening at the sill and letting air enter upward between the two sashes. By Whipp's method the upper sash is lowered, instead of raising the lower one, and outside the opening at the top is fixed what is intended as an exit ventilator, the space being occupied by a perforated zinc panel with hoods and flaps to prevent back-draught. The supposition is that this will act as an exit, the space between the two sashes acting in the usual way as the inlet. It cannot be depended upon to do so, and wherever there is a fire burning in a room the natural exit draught s by the chimney. Where there is no fire, and no fireplace, Whipp's apparatus may be worth trying. It is sold by Mr. E. Redmayne Morphet, of Settle.

INSANITARY PROPERTY IN LIVERPOOL.—Mr. Rienzi Walton, M.Inst. C.E., held an inquiry, on behalf of the Local Government Board, at the Liverpool Municipal-buildings, on the 29th ult., concerning certain applications by the Liverpool Town Council. The most important of these was for sanction to borrow 50,000*l.* for the purchase and demolition of insanitary property; while approval was also sought to the sale of Corporate land in Garnett-avenue, Kirkdale, and to the borrowing of 18,675*l.* for the improvement of public baths and washhouses. The inquiry was attended by Alderman Bartlett (chairman of the Insanitary Property Committee), Councillor Roberts (chairman of the Baths Committee), Mr. Pickmere (deputy Town-clerk), Dr. Hope (medical officer of health), and Mr. Shelmerdine (City Surveyor).

CONTRACTORS' AND BUILDERS' ASSOCIATION, CLECKHEATON.—The Spen Valley Association held their annual dinner at the George Hotel, Cleckheaton, on the 2nd inst. Mr. W. Isherwood presided, and was supported by Alderman Jessop, Mr. Wheawill, and Mr. Dawson, of Huddersfield, and by about fifty members. The Secretary (Mr. H. Waddington) reported that much information had been obtained with reference to the fixing of a uniform charge for day labour and materials in small quantities, and as soon as practicable a list of prices would be presented to subscribers. It had been proposed, also, to form an employers' liability insurance company. The President congratulated them on the fact that the year had been a fairly prosperous one in the building trade. Everybody had been pretty well employed, and there had been no disputes. There was a danger, however, which applied, perhaps, more to the surrounding districts, of workmen enforcing objectionable conditions, which might seriously affect the trade. Alderman Jessop, in proposing the toast of the evening, said as builders and contractors they had long felt that they did not occupy that status in the country they were entitled to. They had been handicapped on every side. It was decided to form an employers' liability company in connexion with the Association.

PROPOSED REMOVAL OF TOWN CHURCHES IN BIRMINGHAM.—Some months ago, at the suggestion of the Bishop of Coventry, a commission, consisting partly of clergymen and partly of laymen, was appointed by the Bishop of Worcester, to consider and report to his lordship upon the desirability of removing from the centre of Birmingham some of the churches to which practically no resident populations are now attached, and to indicate districts in the suburbs to which population has migrated, and which are deficient in church accommodation. The commission has now prepared its report, and (according to the *Birmingham Post*) it recommends the removal of three town churches:—Christ Church, New-street; St. Peter's, Dale-end; and St. Mary's, in St. Mary's-square. The aggregate endowments of these churches, exclusive of pew-rents, amount to about 800*l.* a year, which would be available for the new churches to be built. The sale of the sites, it is estimated, would provide an adequate building fund.

REREDOS, ALL SAINTS' CHURCH, IPSWICH.—A reredos has just been erected in All Saints' Church, Ipswich, as a memorial to the late Mrs. Elizabeth Pegg. Mr. S. Wright, of Morecombe, who was the architect of the church, designed the reredos. It is of wainscot oak, with the exception only of the painted panels, which are of mahogany. It is about 14 ft. in width and 10 ft. high, and consists of a central portion with side wings, the whole enclosed by a stout moulded frame. The centre panel is occupied by a carved gilded cross on a diapered panel, and on each side of this there are two almost square panels, one over the other, with emblems of the four Evangelists painted in gold and silver on a bluish ground. The side wing panels, which are separated from the central portion by buttresses and tracery, are decorated with the symbolical lily and rose. All the panels are surmounted by carved and traceried canopies. The oak work and carving have been carried out by Messrs. Hatch & Sons, of Lancaster, and the decorating by Messrs. Shrigley & Hunt, of Lancaster and London, the painted panels being from the brush of Mr. Jewitt.

REREDOS, ST. BEUNO, BERRIEW, MONTGOMERYSHIRE.—An elaborate oak reredos has lately been erected at this church, and on All Saints' Day was dedicated. It consists of a centre compartment filled with sculpture, the subject of which is "Feed my Sheep," in relief. Flanking the centre are four niches which contain figures on pedestals of four renowned Celtic saints of great local interest:—(1) St. Gwenfrewi (Winifred), with royal crown, a plain cope-like cloak with Celtic ornament on the morse, sword of martyrdom in left hand, and model of her well in her right hand. (2) St. Beuno, the patron saint of the church and one of the Celtic saints best known to history. He lived in the end of the sixth and early part of the seventh century; was a fervent preacher, an orator, the founder of many churches, also the founder of "Bangor Beuno," a great monastic institution where he spent a great part of his life as Abbot. "Beunos stone," from which he frequently preached, is in the neighbourhood. The figure of

St. Beuno represents him as a missionary preacher with Celtic tonsure, his hand holding a crucifix. (3) St. Asaph is in full pontificals, and in the attitude of benediction, his chasuble of ample size, his mitre a low one, his staff in left hand, the crook enriched with Celtic ornament and turned outwards. (4) St. Melangell (Monacella) is represented as an Abbess, her staff turned inwards, and a crouching Hare at her feet. The gradine is double, and the wall space on either side of the reredos is enriched with elaborate traceried panels. A small brass is fixed near the reredos with the inscription, "To the Glory of God, and in Memory of Avraham Howell and Mary his Wife, this reredos is here placed by their children, A.D. MDCCCXCVI., *die omnium sanctorum*." The work has been carried out from the designs and under the superintendence of Mr. F. R. Kempson, of Cardiff and Hereford.

NEW BOARD SCHOOLS, LONDON.—The School Board for London have framed their yearly schedule of new sites to be taken for increasing the present amount of public elementary school provision, by either fresh premises or enlargement of existing schools. The gross total of sites is forty-six, but inasmuch as there are seven pairs of "alternative sites," the actual number will be thirty-nine. Taking a mean between each "alternative" couple, we find that the scheduled properties represent an aggregate of, say, 31 acres 20 poles, and are situated as follows:—St. Ann's (Truant) School, Barnes, about 5 acres 5 poles; Leven-road, Bromley; Glengall-road, Poplar; Settles-street or Rutland-street, and Smith-street, Mile End; Commercial-street (St. Jude's School), Whitechapel, or Palmer, Freeman, and Shepherd streets, Spitalfields; Riley and Sun streets, Bermondsey; Marlborough-road, Camberwell; Nos. 4-15, The Paragon, Old Kent-road; Agincourt-road (Fleet-road School), Kentish Town; Camden Hall, in King-street, Camden Town; Essendine-road or Widley-road, Kilburn; Deauville-road, Clapham; Broomhill-road, or "Frogmore," Wandsworth, and Brandlehow-road, Putney; Tay Bridge-road, Battersea; Beresford-street, Camberwell Gate; Peckham-road, and Gervase-street, Camberwell; Grange-street, Shoreditch; Ivy-cottage in Mowlem-street, and Orange and Daniel streets, Bethnal Green; Cassland-road or Bradstock-road, Northwold-road, Homerton College, Rushmere-road, Hackney, and High-street, Stoke Newington; New-road, Woolwich; Conway-road, and Burrage-grove, Plumstead; Dallas-road, Sydenham; Dalmain-road, Brockley Park; Shuckburgh-road, Lewisham; Horn-lane, or Tunnel-road, Greenwich; a vacant plot between the police-station and the Board's Divisional Offices, Blackheath-road; Buckingham-street, or Offord-road, Barnsbury park; White Lion-street, and Risinghill-street, Islington; and Rylett-crescent, Hammersmith. The sites (except the first) lie within the Tower Hamlets, Southwark, Marylebone, West Lambeth, East Lambeth, Hackney, Greenwich, Finsbury, and Chelsea divisions. The highest number (seven) of sites is in the Tower Hamlets division, Chelsea has one only. The Risinghill-street, Sydenham Hill-road, Burrage-grove, Mowlem-street, Fleet-road, St. Jude's, and Rutland-street (or Settles-street) Board Schools are to be enlarged on the sites respectively named above.

THE METROPOLITAN ASYLUMS BOARD.—An ordinary meeting of the managers of the Metropolitan Asylums District was held at the County-hall, Spring-gardens, on the 7th inst. A letter was read from the St. Pancras Guardians forwarding a resolution expressing dissent from the proposal of the managers to acquire a site on the Thames Embankment for the erection of new offices. The Chairman, Sir E. Galsworthy, remarked that the Board had never had a site offered to it which would compare, either as to convenience or price, with the one under discussion.—An amendment to refer the matter to the General Purposes Committee for consideration and report was rejected by 40 votes to 17, and the original motion was agreed to. Mr. Scovell presented a report from the Works Committee submitting a detailed estimate of the probable cost of erecting the South-Western ambulance station. The Board directed that the estimate be forwarded to the Local Government Board with a request that they would issue an order sanctioning the expenditure of £4,314, in respect of the works, and authorising the raising of the amount on loan.

MOTOR CAR REGULATIONS.—The Home Secretary has issued a series of regulations relating to the storage and use of petroleum in connexion with motor cars. They provide that the oil shall be kept in tanks not holding more than 20 gallons, and that no car shall carry more than two of these tanks at the same time; they also provide for the proper ventilation of the tanks, and the precautions to be observed in filling them, and in dealing with the oil generally. The circular says:—"In promulgating the following regulations relating to the keeping, conveyance, and use of petroleum in connexion with light locomotives, the Secretary of State for the Home Department desires to call public attention to the dangers that may arise from the careless use of those more volatile descriptions of petroleum to which these rules apply, being petroleum to which the Petroleum Act, 1871, applies, and commonly known as 'mineral spirit.' Not only is the vapour therefrom, which is given off at ordinary temperature, capable of being easily ignited, but also, when mixed with air, of forming an explosive mixture. Hence the necessity for strict precautions in dealing with and handling the same, and for the employment of thoroughly sound and properly closed vessels to contain the same, the importance of avoiding the use of naked lights in dangerous proximity to the same or to any place where such petroleum may be kept, and generally of taking precautions to prevent contact of the highly inflammable vapour of this very volatile liquid with any form of artificial light." The Local Government Board also issue, under date of November 9, a circular to County Councils and other highway authorities, containing the regulations made under the Locomotives on Highways Act, 1896. In these regulations a "light locomotive" is defined as a vehicle propelled by mechanical power which is under three tons in weight unladen, and is not used for the purpose of drawing more than one vehicle (such vehicle with its locomotive not exceeding in weight unladen four tons), and is so constructed that no smoke or visible vapour is emitted therefrom except from any temporary or accidental cause. In calculating for the purposes of this order the weight of a vehicle unladen, the weight of any water, fuel, or accumulators used for the purpose of propulsion shall not be included. The locomotive is not to exceed 6 ft. 6 in. in width, and the width of the tyres of the wheels is to be in proportion to the weight of the vehicle. It is to have two independent brakes, in good working order, and of sufficient power to hold the wheels. A lighted lamp is to be carried between one hour after sunset and one hour before sunrise. It is not to be driven at a greater speed than twelve miles an hour in the case of the lightest locomotives, and at a lower maximum for the heavier vehicles. If necessary, warning of approach is to be given by bell or other means. There are also regulations affecting light locomotives which are intended to draw other vehicles. An explanatory circular is issued with the regulations.

BUILDING TRADES EXHIBITION.—This exhibition, which was not held this year (the management having rightly come to the conclusion that it was not desirable to attempt an annual exhibition), is to be resumed next year, in March, at the Agricultural Hall. A good many architects have joined the committee, and arrangements are being made for craftsmanship competitions to be held nightly.

REREDOS, BRIXWORTH CHURCH, NORTHAMPTON.—In the Parish Church of All Saints, at Brixworth, a reredos of Caen stone has just been erected. It was designed by Messrs. Umsworth & Newberry, of Westminster, and the carving was executed by Mr. Hitch, of London. The figure in the centre panel is that of Jesus Christ. On one side are the panelled figures of St. George, St. Edmund, and St. Edward, and on the other those of St. George, St. Augustin, and St. Alban. These are surmounted by small figures of angels, and from the centre rises a stone cross. In conjunction with the work a new altar of panelled oak has also been provided.

LEGAL.

BUILDING TRESPASS AT YEADON:

IMPORTANT JUDGMENT IN THE QUEEN'S BENCH DIVISION.

ON Saturday, the 31st ult., Mr. Justice Kennedy, in the Queen's Bench Division, delivered a considered judgment in the case of "Harrison *v.* The Yeadon Urban District Council," an action which was tried before his Lordship at the last Leeds Assizes. It appeared from the judgment that the plaintiff, Mr. William Harrison, claimed an injunction to restrain the defendants from pulling down, or otherwise interfering with, a coachhouse and stable, which the plaintiff was causing to be erected on a plot of land on the western side of the Cemetery-road, Yeadon, close to a number of cottages owned by him. The defendants in February or March last proceeded to pull down the buildings, contending that they were an infringement of their by-laws in so far as by their erection the plaintiff was making a new street in the space in question, and, further, that the passage was not of sufficient width. The plaintiff also claimed damages. His Lordship said that the defendants had raised several points in their defence, but at the trial it was agreed that the only question to be dealt with was whether or not, at the time of the erection of the buildings, a certain passage which was in front and immediately to the south of the building was being formed into or laid out as a new street. The defendants said that the passage was being laid out in such a way as to form a new street, and that it was only 13 ft. 3 in. wide instead of 26 ft. 6 in., as required by the by-laws. It appeared that within the defendants' district the plaintiff was at the time possessed of a strip of land, running westwards for about 300 ft. from the public highway, namely, the Cemetery-road. The strip was bounded on the south by an ancient wall, belonging to the defendants, about 3 ft. 6 in. high, and running back to the Cemetery-road. In 1878 a row of cottages, called Carlton-terrace, was built to the southwards, and in a line with the Cemetery-road, parallel to the wall, for a distance of about 150 ft. The space between the cottages and the boundary wall was 13 ft. 3 in. The District Council Authority had prevented the placing of an ash-pit there by the owner. Three of the cottages had steps down into the 13 ft. space, but the others had no exit into it in the shape of a doorway, and there was nothing to show that this space had ceased to be private property. The plaintiff had built upon his own plot of land, the houses forming a block on the Cemetery-road, with entrances leading, by a garden-gate, into the roadway. The houses themselves looked towards the south from the boundary wall, from which they stood back for a considerable distance. The buildings complained of had not altered in any way the means of exit from or of access to the houses, and it was important to bear in mind that the plaintiff was building upon his own plot of ground, for the use of two of his houses, occupied respectively by himself and by his father, at a point further away from the Cemetery-road, and opposite to the back of the eighth cottage in Carlton-terrace. The defendants contended that by the erection of the coach-house and stable in question the plaintiff was laying out a new street, and that if this building was suffered to stand, the new street would only be 13 ft. 3 in. wide, instead of 26 ft. 6 in. as required by one of their by-laws. There was no aperture or means of exit of any kind from the building, as erected, into the space or passage. The only access in the building as constructed was at its north end farthest away from the space or passage. The question was, whether the plaintiff had by this erection been beginning to lay out a new street. If so then the width of the new street would not be in accordance with the requirements, and the defendants would be justified in what they did, and in what they further threatened to do, namely, to prevent the completion of the building. After a careful consideration of all the facts, he felt bound to find against the defendants. It could not be inferred from the fact of the building of this coach-house and stable for the benefit of two of the houses that the plaintiff was laying out a new street along the passage. He should, therefore, give judgment for the plaintiff, who, he understood, only asked for nominal damages in respect of what had been already done by the defendants. The substantial claim was for an injunction, and that he granted with the nominal damages of 40*s.* for the trespass already committed.

His Lordship granted a stay of execution for fourteen days, with the view to an appeal. He also explained that the injunction which he had granted was only meant to restrain the defendants from preventing the plaintiff from restoring the building as originally contemplated.

Mr. Robert Wallace, Q.C., and Mr. W. R. Watson, appeared as counsel for the plaintiff, and Mr. Lawson Walton, Q.C., and Mr. Scott Fox, represented the defendants.

ACTION AGAINST CONTRACTORS.

THE case of Davies *v.* John Aird & Sons came before Mr. Justice North, in the Chancery Division, on the 6th inst., on a motion by the plaintiff to restrain by injunction the defendants from continuing certain blasting operations in such a way as to be, as he alleged, an intolerable nuisance to him.

It appeared that the plaintiff occupied a country-house near Radnor in Wales, the house being situated in a valley, about 400 yards from the house were certain rocks which the defendants were blasting, and the plaintiff now sought an injunction to restrain the defendants from continuing such blasting operations so as to be a nuisance to him. He alleged that eighteen separate explosions took place in one morning.

Mr. Swinfen Eady, Q.C. (counsel for the defendants) asked that the motion should stand over in order that evidence might be filed on behalf of the defendants.

Mr. Vernon Smith, on behalf of the plaintiff, said that the explosions were affecting his client's health.

Mr. Swinfen Eady said that the plaintiff had purchased the property, and there had been some litigation with his predecessor in title with regard to the blasting at the quarry. On that occasion a definite arrangement was come to, and an undertaking was given that no dynamite should be used, but in future only gunpowder in blastings in the quarry. There were also other provisions in the agreement, and he was prepared to give that undertaking now in the terms of that arrangement.

After some further discussion this was accepted, it being arranged that the evidence should be filed as soon as possible.

ALLEGED INTERFERENCE WITH ANCIENT LIGHTS:

CASE IN THE CHANCERY DIVISION.

MR. SWINFEN EADY, Q.C., on the 6th inst. made an application to Mr. Justice North in the Chancery Division in the case of the School Board of London *v.* Harrod's Stores, it being a motion for an injunction to restrain the defendants from the alleged interference with ancient lights belonging to the defendants.

The learned counsel stated that it was an old motion which had been going on for over twelve months upon an undertaking by the defendants not to do anything to obstruct the ancient lights of the plaintiffs' school. The learned counsel said that the defendants had admitted over and over again that

their new building would create a great obstruction, but they proceeded to buy up the interest of the plaintiffs in the school with a view either to erecting another school, or sending the scholars somewhere else. In defiance of an arrangement between the parties the defendants had proceeded with their building, and had increased the height of it so that at the present time it seriously obstructed the ancient lights of the plaintiffs. Mr. Swinfen Eady therefore asked that the defendants would undertake now not to further increase the height of the building.

Counsel for the defendants said that he could give no undertaking not to build at all, for the following reason: The building was an extensive one, and covered a wide area, whilst the plaintiffs' school was a very small house, or building, and the defendants' building only affected one extreme corner of it. In these circumstances he did not think it right that the defendants should be asked to give an undertaking not to build at all, but they would give an undertaking not to increase the angle which would infringe the plaintiffs' lights.

Ultimately the case stood over till next motion day, the defendants undertaking not to do any building which would further interfere with the plaintiffs' ancient lights.

IMPORTANT BUILDING CASE IN THE CHANCERY DIVISION SETTLED:

ACTION AGAINST THE LONDON STOCK EXCHANGE FOR INFRINGEMENT OF ANCIENT LIGHTS.

THE case of the Drapers' Company *v.* Banbury came before Mr. Justice Kekewich in the Chancery Division on Tuesday last, it being an action brought by the Drapers' Company against the Trustees and Managers of the London Stock Exchange, and Messrs. Lawrence & Sons, their contractors, the object of the action being to obtain an injunction to restrain the defendants, their contractors, servants, and agents from continuing the erection of buildings on the site of No. 22, Throgmorton-street, E.C., so as to obstruct and diminish the access of light to the windows of the plaintiffs' property, known as the Drapers' Hall and No. 27, Throgmorton-street. The plaintiffs also claimed, if necessary, a mandatory injunction to have the defendants' buildings pulled down.

Mr. Warrington, Q.C., and Mr. Borthwick appeared as counsel for the plaintiff, and Mr. Renshaw, Q.C., and Mr. Methold represented the defendants.

Mr. Warrington, in the course of opening the plaintiffs' case, said that the writ in the action was issued on July 2, and notice of motion for an injunction was given at once. When that motion came on for hearing, however, there appeared to be a great conflict on the evidence, and it was thought better to take a speedy trial instead of bringing on the case on motion. Meanwhile the defendants' building had been completed, but, of course, said the learned counsel, they had done that at their own risk.

Mr. Renshaw said that he thought that the defendants had finished their building before the order was made.

Mr. Warrington said that the plaintiffs were the owners of their hall, which stood on the north side of Throgmorton-street, facing south. In the eastern part of the wall of Drapers' Hall, facing Throgmorton-street, was a window, which was an ancient light. The present Drapers' Hall was built on the site of the old one about the year 1870, so that all the windows were ancient lights.

His Lordship: You mean all the windows of the new hall?

Mr. Warrington: Yes, so far as it at present exists. The learned counsel said that as regarded one window at No. 27, Throgmorton-street, he might have to rely on the ancient light which existed in 1714 or thereabouts.

The learned counsel then proceeded to describe the geography of the *locus in quo*, but, before dealing with the facts of the case, his lordship interposed with the remark that he was sorry that two great institutions felt bound to come to him for assistance in settling their differences.

After the usual mid-day adjournment Mr. Warrington said that although he could not say that the parties had actually come to an arrangement, there could be but little doubt that a settlement of the matter in dispute had been arrived at. The difficulty was that he had nobody there representing the Drapers' Company except a clerk, and he (the clerk) wished to lay all matters before the court of the Drapers' Company before anything was finally decided. In these circumstances there was an understanding between his learned friend and himself as to the form in which the matter should go before the court of the Drapers' Company. The defendants' offer was a sum for damages and the costs of the action, and it had been arranged that a certain agreement regulating the height of the building in Throgmorton-street, which now existed between the parties as to part of the property, should be extended so far as the defendant's interests were concerned, to No. 22 and No. 23, Throgmorton-street.

Mr. Renshaw remarked that it was one of his points that that agreement already extended to that property.

Mr. Warrington said that he supposed the best course would be to let the matter stand over generally, and if necessary they (the learned counsel) could apply to his Lordship.

Mr. Renshaw said that he did not think it would be necessary.

His Lordship assented to this arrangement, and the case was accordingly ordered to stand over generally, with liberty to apply to his Lordship if necessary.

MEETINGS.

MONDAY, NOVEMBER 16.

Royal Institute of British Architects. — Mr. R. Phené Spiers on "The Great Mosque of the Omeyiades, Damascus." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. G. Reid on "Sanitary Appliances." 8 p.m.

Leeds and Yorkshire Architectural Society.—Address by the President, Mr. W. Watson, and Distribution of Prizes. 7.30 p.m.

TUESDAY, NOVEMBER 17.

Institution of Civil Engineers.—Papers to be further discussed:—(1) "The Tower Bridge: Superstructure," by Mr. G. Cruttwell; and (2) "The Machinery of the Tower Bridge," by Mr. Sam G. Homfray. 8 p.m.

WEDNESDAY, NOVEMBER 18.

Society of Arts.—Opening Address of the 143rd Session, by Major-General Sir Owen Tudor Burne, Chairman of the Council. 8 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection in St. George's, Hanover-square, W. Meet at Vestry Hall, Mount-street, W., at 2 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting of the Members. 8 p.m.

Carpenters' Hall (London Wall, E.C.)—Professor T. Roger Smith, on "Timber, Site, and Foundations." 8 p.m.

THURSDAY, NOVEMBER 19.

Arts and Crafts Exhibition Society.—Mr. Walter Crane on "Decoration of Public Buildings." 8.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. W. C. Tyndale on "House Drainage." 8 p.m.

FRIDAY, NOVEMBER 20.

Architectural Association.—Mr. F. Inigo Thomas on "Garden Design." 7.30 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

19,101.—ARTIFICIAL STONE: *A. Gosling.*—This invention consists in crushing a kind of fine sandstone which is now quarried at Jackson Edge, near Disley, Cheshire, and mixing this (crushed either coarse or fine), in various proportions, with Portland or other cement or hydraulic lime, with or without sand. Materials can then be moulded into building blocks, paving, or roofing slabs, chimney-pots, &c., &c.

21,875.—ROOF GUTTERS: *J. Taaffe.*—By means of the attachment of a rain-deflector cast on the bottom of outside of upstand, projecting 1½ in. beyond the line of the wall, and 1½ in. below the sole of the gutter, inventor prevents rain or snow from penetrating between sole of gutter and top of wall, at the same time protecting both from the weather; also, in case of leakage or overflow the device will prevent rain or slush oozing under same.

23,155.—COLOUR WASH OR DISTEMPER PAINT: *A. T. Hall.*—In this invention carbonate of lime, glycerine, glue, glue size, linseed oil, and oak varnish, or some of them, are heated with a suitable amount of water and mixed with a disinfectant, such as carbolic acid or cresylic acid. The mixture is then boiled and oxydised, either by a blast of air or by the addition of permanganate of potash, chromic acid, or other oxydising agent. Colouring material may be added and the mass run into moulds. The following is example of a formula:—1½ lb. glue, 2 lb. raw linseed oil, ½ lb. oak varnish, ½ lb. glycerine, 6 lb. water, 1 oz. cresylic acid, ½ lb. bichromate of potash, ½ lb. oxide of iron, 10 lb. Paris white, and 4 lb. litharge.

7,926.—SYPHON FLUSHING CISTERN: *E. Brice.*—The inventor adapts a fixed standpipe in an ordinary flushing box or cistern. Upper end of pipe is flared and rises a little above top of cistern and lower end is fixed to bottom of cistern and connected to down pipe. Covering the pipe is a bell or cylinder with closed top and open bottom, and having trunnions on opposite sides near top. Lower end of this bell is closed by a pierced plate working freely on standpipe. The neck or place which works thereon and is carried by the cap of the bell is, say, about an inch or two long. When the lever of the cistern is pulled, the bell with its contained column of water is lifted, and the level of the said column is raised above the mouth of the standpipe and thus starts the syphonic action.

16,258.—BURNING BRICKS, &C.: *A. Gibbs and Others.*—The invention consists in a special arrangement of flues and dampers in kilns for burning bricks and other materials. The inventor builds preferably four kilns in a rectangle with chimney shaft in centre. A main flue runs through the centre of the four kilns and branches into the chimney. Dampers are provided to this flue outside each kiln, and at the bottom of the chimney cross flues run from kiln to kiln, these also being provided with dampers. Steam flues either of brick or iron spring from crowns of kilns and pass to the chimney.

17,360.—ROLLER SHUTTERS: *P. Zink.*—The invention has for its object the prevention of roller shutters becoming unrolled or falling down. For this purpose inventor adopts a stop, consisting of a pin or the like, which is automatically placed in the path of a shutter to prevent its accidental descent. This stop is controlled by a helical spring.

19,106.—SASH-WEIGHT: *G. Wilson.*—The invention consists in a sash-weight having the orifice in it for the passage of the suspending cord produced without the use of a core in moulding, the sash-weight being solid throughout its length, with two recesses on opposite sides of the top.

19,338.—FLUSHING DEVICES FOR WATER-CLOSETS: *D. T. Kenney.*—Various devices are here specified, the first three, as follows, being the principal:—(1) The combination of a main valve and a vent valve with a stem operating to raise first the vent valve and then the main valve. (2) The combination of a valve outlet chamber, a main valve, and an inlet chamber, there being a vent valve carried by a main valve. (3) The combination of a flushing valve, a spindle journalled to its stuffing-box, an internal arm, and a closing cap. Besides these, a number of more or less analogous devices are also specified.

20,563.—SLIDING AND SWIVELLING DOORS AND PARTITIONS: *J. E. Lucas.*—This invention relates to moveable partitions used for the purpose of making two or more rooms into one large room. Partitions are made in sections with a swivelled leaf so hung that that leaf or leaves may either be laid flat against wall, or folded one on another. The arrangement for swivelling is the usual plan for suspending from the top and running on a bottom rail or with rollers running in a groove.

22,922.—COVERING WALL SURFACES: *G. H. Sankey.*—The invention consists in covering interior walls and ceilings with non-corrosible or not readily corrosible sheet metal, such as zinc, copper, brass, aluminium, &c., which bear embossed or engraved designs or patterns.

23,357.—ARRANGEMENT OF SOIL, WASTE, AND OTHER PIPES: *J. G. Oatley.*—The object of the inventor is to prevent flooding from a water-closet, sink, &c. Inventor provides each receptacle or its trap with an overflow pipe, all of which are connected with a vertical overflow discharge pipe, which in turn is connected with the drain. Overflow pipes also act as ventilating pipes.

9,211.—SANITARY TRAPS FOR SINKS, &C.: *H. E. Hadley.*—The object is to prevent destruction of water-seal by syphonic action through discharge of water along down pipe. In a sink or water-closet having a U-shaped, bend, &c., inventor provides in the middle pipe, between seal and down pipe, a chamber of spherical or other form. This prevents the complete discharge of the water, the admission of air breaking up the continuity of the flow of the liquid. At end of syphonic action, water remaining in the intermediate chamber falls back into the U-shaped connection and seals it.

15,520.—PREPARATION OF STONE, &C., FOR PILLARS, PEDESTALS, &C.: *K. Hergenhahn.*—A process for manufacturing ornamental masonry by submitting the rough undressed blocks as they leave the quarry to suitable grinding apparatus and machine rubbers, so as to do away with all costly hand mason's work.

17,513.—WORKING STONE, MARBLE, &C.: *K. Hergenhahn.*—The present process consists in treating the roughly split and dressed blocks of stone (especially granite, syenite, &c.) by means of the coarse—or, at most, the coarse and medium—hammers, the toothed and coarse scraping chisel and drag, and then finishing the work by grinding, according to invention specified in No. 15,520.

18,122.—SIPHON DISCHARGE FLUSHING APPARATUS: *W. Anty and others.*—Inventors employ a flushing chamber, joined to and sustained by a siphon rising from floor of cistern. In such chamber is a valve carried on a shaft, the said valve being controlledby hand as usual. This chamber is provided with a ledge on which the valve rests. When valve is raised through pulling lever, valve is tilted so as to clear opening of siphon, and water has continuous flow; this lasts until cistern is emptied by the flush being started by lifting of valve. Apparatus is provided with stop-cock or ball-valve as ordinary to regulate filling of container.

NEW APPLICATIONS FOR LETTERS PATENT.

OCTOBER 19.—23,130, J. Colquhoun, Open and Close Ranges.—23,151, W. Floyd, Sash Window-fasteners.—23,190.—J. Nicholls, Raising, Lowering, and Fastening Window-sashes. — 23,190, S. Hoenack, Scaffoldings.—23,203, R. Ovens and Others, Automatically Flushing Water-closets.—23,215, J. Johnstone, Window-sashes.

OCTOBER 20.—23,236, D. Morgan, Spring Action for Closing Doors, Gates, Casements, &c.

OCTOBER 21.—23,341, P. McCarthy, Instrument for Computing the Quantities in Earthworks, &c.—23,346, R. Walker, Manufacture of Bricks, Tiles, &c.—23,360, R. Walker, Manufacture of Artificial Stone-blocks and Building Concrete Walls therewith.—23,404, A. Boult, Dowel Pins and Joints.

OCTOBER 22.—23,448, F. Borrison, Window-sashes.—23,453, H. Davies, Joiner's Bench-stop.—23,456, J. Warman, Box-lock Latches for House Doors.—23,465, W. Eckstein and J. Willmore, Cellar Flaps. — 23,468, J. Liversidge, Window-frames and Sashes used in houses, workshops, &c., where cords, weights, and pulleys have hitherto been used.

OCTOBER 23. — 23,535, H. Satcliffe, Water-closet Apparatus.—23,559, W. Brown and J. Brunning, Chimney Cowl.

OCTOBER 24.—23,632, J. Galloway, Flushing Cisterns for Water-closets.—23,687, E. Moss, Fastener for Window-sashes.—23,692, D. Grey, Flushing Apparatus.—23,702, J. Nechutings, Gas-Pipe Cutter.

OCTOBER 26.—23,724 and 23,725, J. Morton, Glazed Bricks.—23,734, N. Simmons, Water-closets and Flushing Apparatus.—23,773, W. Eckstein and J. Willmore, Ventilators.—23,787, R. White, Water-closet Pans.—23,795, W. Hewitt, Tiles.

OCTOBER 27.—23,848, H. Harvey, Coin-freed Locks or Bolts.—23,850, J. Elliott, Air Inlet to Drains.—23,888, G. Stephen, Ventilating Buildings, Rooms, &c.—23,941, W. Thompson, Imitation Wood Carvings.

OCTOBER 28.—23,974, S. Rolfe, Automatic Apparatus for supplying Disinfectants to Water-closets, &c.—23,981, A. Gray, Fixing and Adjusting Door Knobs to Spindles.—24,005, W. Campbell, Automatic Slot Window-fastener.

OCTOBER 29.—24,071, J. Chaulin, "Safety" Bolt.—24,078, W. Nicholson, "Fixing Bricks" for Building Purposes.—24,081, H. Clay, Trough Closets, Latrines, and Water-closets, and Flushing Apparatus therefor, partly applicable to general flushing purposes. — 24,093, J. Knights, Coloured Tiles for Floors or Building Purposes.—24,109, J. Duckett & Sons, Limited, and F. Button, Grease Traps.

OCTOBER 30.—24,169, J. Armstrong, Screws of Drain and Sweeps' Machines. — 24,175, T. Flynn, Window Sashes.—24,187, G. Brown, Perforated Saw Blades for Cutting Stone, Marble, Granite, &c.—24,190, H. Hinks, Electrolier Ceiling Fittings.—24,239, E. Clements & R. Sparrow, Bookcase Door Sashes and Fastenings.—24,241, Tonks, Ltd., & J. Blundell, Bolts for Doors, Casements, Shutters, &c.—24,242, A. Clery, Artificial Stone.—24,275, P. Esquillot, Imitation Solid Wood Panels.

OCTOBER 31.—24,307, J. Sharp, Roof Coverings.—24,314, L. Ormond, Ventilating Greenhouses, Iron and Wood Chapels, Store Rooms, &c.—24,337, E. Holding & others, Opening and Closing Windows, Shutters, &c.—24,347, C. Morris, Locks and Bolts for Doors.—24,356, A. Haslewood, Window Wedge.

PROVISIONAL SPECIFICATIONS ACCEPTED.

17,178, J. Rudd, Crooks and Staples Applicable to Doors and Gates. — 18,745, W. Egginton, Port-

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Higher Grade Schools	Tottenham S. B.	3½ per cent. on cost.	Jan. 15'97
*Higher Grade School	Scarborough S. B.	100l. 75l. and 50l. premium	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Roadmaking	Beckenham U.D.C.	J. A. Angell, Council Offices	Nov. 16
Eight Houses, Hilderthorpe, Yorks	R. Dixon	J. Earnshaw, Archt. Bridlington Quay	Nov. 17
Additions to Hotel, Ben Rhydding, Yorks	.....	S. Jackson & Son, Archts. Tanfield-chmbrs, Bradford	do.
House, Newburgh, Aberdeen	.....	W. Ruxton, Archt. 84, Union-street, Aberdeen	do.
*Making-up and Paving Road	Fulham Vestry	C. Botterill, Vestry Hall, Walham-green	Nov. 18
Pair Semi-detached Villas, Braunton, Devon	.....	W. C. Oliver, Archt. Bridge End, Barnstaple	do.
Fireproof Staircase, Holyrood Mill, Chard, Somerset	Gifford Fox & Co.	J. F. Trew, Archt. County-chambers, Gloucester	Nov. 19
Roofing, Cattle Market	Dundee Town Council	W. Mackison, Archt 91, Commercial-st. Dundee	do.
Improvement Works, Cork-street, &c	Halifax Corporation	E. R. S. Escott, C.E. Town Hall	do.
Cottage and Office	Fordingbridge (Hants) Gas Co.	F. Bath, Archt. Salisbury	do.
Sewerage Works	Richmond (Yorks) R.D.C.	R. Robinson, C.E. 6, Dixon-terrace, Darlington	Nov. 20
Chapel, Felton Fell, Northumberland	.....	J. W. Thompson, Archt. 48, Collingwood-st. Newcastle-on-Tyne	do.
School Residence, Curragh, Kilbrin, Ireland	.....	Rev. J. D. O'Callaghan, Ballyclough, Mallow	do.
Factory, Stannary, Halifax	.....	J. F. Walsh, Archt. Bank-chambers, Halifax	do.
Two Houses, Wellesley-road, Great Yarmouth	.....	C. G. Baker, Archt. Town Hall-chambers	Nov. 21
Paving Works, &c.	Littlehampton U.D.C.	H. Howard, Surv. Town Offices	do.
Sewers	Denton (Lancs) U.D.C.	Lomax & Lomax, C.E. 11, Fold-street, Bolton	do.
Block of Buildings, Newcastle, co Down	P. F. M'Cartan	W. J. Moore, Archt. Ann-street, Belfast	do.
Sewers, &c.	Monmouth T.C.	C. H. Lalley, Engr. 16, Gt. George-street, S.W.	Nov. 23
Outfall Works, Wheatley Carr, Burnley	Barrowford U.D.C	J. T. Landless, C.E. Station-buildings, Nelson	do.
*Bathrooms, Baths, Water Supply	Kent & Canterbury Hospital	A. Bromley, Archt. Cathedral Precincts	do.
House, Moira	G. N. R. Co. of Ireland	T. Morrison, Sec. Amiens-st. Terminus, Dublin	do.
Parish Church, Castlemaine, co. Kerry	Rev. Jas. Counihan	W. G. Doolin, Archt. Dawson-chambers, Dublin	Nov. 24
Drainage Works	Southampton Corp.	W. B. G. Bennett, Boro' Engr. Municipal-bldgs.	do.
*Elementary School	Willesden S. B.	W. Vincent, Offices, Dyne-rd. Kilburn, N.W.	do

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Kerbing, Making-up, &c. Montague-av.	Lewisham B. of W.	Surv. Dept. Office, Catford	Nov. 24
*Kerbing, Making-up, &c Adelaide-rd.	do.	do.	do.
*Sewer Construction	Hendon R.D.C.	Union Offices, Edgware, Mid.	Nov. 25
Sewers, &c. Westgate-on-Sea	Isle of Thanet R.D.C.	Bailey, Denton, & Co. Engrs, Palace-chambers, Westminster, S.W.	do.
Police Station, Bideford	Devon Jt. Stand. Com.	R. H. Harbottle, Archt. Exeter	do.
Extensions, &c. to Town Hall	Eccles (Lancs) T. C.	Mr. Bagot, Archt. 27, Brazenose-st. Manchester	do.
*Chapel	Mundesley Wesleyan Chapel Trustees	Rev. J. S. Prior, Bacton-rd. North Walsham	Nov. 26
*Additions and alterations to Brewery	Portsmouth United Breweries, Ltd.	Co. Offices, Elson-street, Portsmouth	do.
*Erection of Board Schools	Acton School Board	Board Offices, Petersfield-road, Acton	do.
Shop Fronts, &c. Central Stores	Halifax Indus. Soc. Ltd.	Horsfall & Williams, Archts. Halifax	Nov. 27
Waterworks, Sutton	Runcorn R.D.C.	J. Ashton, 71, High-st. Runcorn	Nov. 28
Sewerage Works	Hanley (Staffs) Corp.	J. Lobley, Boro' Engr. Town Hall	Nov. 30
*Sinking Shaft, &c.	Lichfield Conduit Lands Trustees	A. R. Chinn, The Close, Lichfield	do.
*Sewering, Tarpaving, Kerbing, &c. Road	Hanwell U.D.C.	Hanwell Council Offices	do.
*Alterations P.O. Leamington Spa	Commrs. H. M. Works	12, Whitehall-place, S.W.	do.
*Electrical Installation, Deptford Public Baths	Commrs. of B. & W. (St. Paul, Deptford)	T. Dinwiddy, Archt. 5, Whitehall, S.W.	do.
*Painting and Repairs	London C. C.	Architects' Dept. Spring Gardens, S.W.	do.
*Refreshment House, Battersea	do.	do.	Dec. 1
*Galvanised Iron Buildings	N. Wales Counties Asylum	W. Barker, Asylum, Denbigh	Dec. 3
Sewage Filtration Works, Ringley	Bolton Corp.	Hinnell & Murphy, C.E. 41, Corporation-st. Manchester	Dec. 8
*Dredging	Thames Conservators	Offices, Victoria Emb. E.C.	No date
*Headquarters and Drill Hall	Medical Staff Corps	W. Bakewell, Leeds	do.
Additions, &c. to House and Premises, Rose-road, Hereford	.....	W. W. Robinson, Archt. 10, King-st. Hereford	do
Alterations to Assembly Works, Leeds	.....	J. Barker, Archt. Exchange-buildings, Mirfield	do.
Four Houses, Denmark-road, Rushden, Northants	.....	H. Admitt, Archt. High-st. Rushden	do.
Excavations, "Castle Hotel," Barry-street, &c. Bradford	.....	J. Jackson, Archt. Barry-st. Bradford	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised	Salary.	Applications to be in.
*Inspector of Works	Lewisham B. of W.	2l. 2s. rising to 3l. 3s. per week	Nov. 17
*Assistant Surveyor	Shoreditch Vestry	150l. rising to 200l. per ann.	Nov. 20

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv., vi., *&* viii. *Public Appointments, pp.* xviii. *&* xxi.

able Sewer Gas Extractor and Destroyer, in Conjunction with Sewer Disinfector.—19,900, J. Browne, Ventilator for Rooms, &c.—9,451, J. Taylor, Self-Acting Outlet Ventilator.—20,536, D. James, Self-Sustaining Apparatus for Cage-Lifts.—20,743, D. Boyce, Sanitary Flushing Apparatus.—21,337, S. Heal, Chimney Tops.—21,643, C. Davis, Roofing Tiles.—22,067, A. Nicholl, Clay Presses and Bricks Formed Thereby.—22,282, C. Briscoe and G. Shaw, Ceiling Roses for Electric Lamps.—22,399, C. Stileman, Inlet Trap for Admitting Fresh Air to Sewers or Drains.—22,572, W. Roberts, Roof Covering Specially Applicable to Slate Covered Roofs.—22,654, C. Horton, Novel or Improved Apparatus for Use in Disinfecting Closets, Urinals, Gulleys, &c.—22,671. T. Rhodes and R. Gaunt, Water Closets.—18,238, T. Vardley, Tongue and Grooved Stoneware or Earthenware Socketed Pipe for Sanitary Purposes.—20,661, J. Entwistle, Window Sash Fastener.—21,324, J. Walters, "Automatic Flusher" Water-closet Cistern.—21,336, J. McNab, Windows and Frames.—21,391, J. Hulse, Junctions and Connecting Pipes for Soil and Other Waste Pipes.—21,425, H. Taylor, Devices for Operating Windows for Cleaning.—21,660, E. Geary, Making Sound Joints Between Lead, Iron, and Earthenware Pipes, &c.—22,224, F. Trewartha, Devices for Holding Open Doors.—22,762, G. Rockliffe, Door Fastenings.—23,020, J. Heywood, Cans and Canisters Containing Varnish, Paint, Oil, &c.—23,151, W. Floyd, Sash and Window Fasteners.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

22,053 and 22,054, J. Gordon, Glazing of Brick Tiles or Other Surfaces.—2,485, A. Brookes, Builders' Scaffolding.—9,586, A. Dornan, Brackets for Supporting Rain Water Gutters or Spouting.—17,830,—J. Foster, Kilns for Burning Lime, &c.—20,289, T. Osborne and W. Wiseman, Window Frames and Sashes.—21,713, J. Nuttall, Windows.—22,320, F. Rider and H. Colliver, Spring Hinges.—23,604, J. Linkleter, Ladders.—24,200, W. Büsche, Espalier Walls.—373, J. Cinnamon, Heating and Ventilating.—18,395. J. Thomson, Opening, Closing, and Fastening Windows, &c.—19,921, F. Zaun and J. Wirtz, Casement and Door Fasteners.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

October 15.—By WILKINSON, SON, & WELCH (at Brighton).

Brighton.—Clifton-rd., "Sandford Lodge," f.	£1,400
7, 10, 11, 12, and 17, Bedford-rd-sq., f., r. 462l. 8s.	6,810
12, Silwood-st., f., r. 35l.	630
Silwood-st., "The York Arms" p.h., f., r. 45l.	1,500
1, 2, 3, and 5, Norfolk-buildings, f.	1,125
West-st., "The Criterion" Restaurant, c., r. 110l.	2,325

By HEPPER & SONS (at Leeds).

Leeds.—Chapel Allerton, "Gledhow House," and 2 a. 2 r. 4 p., f.	2,925
Hunslet, Goodman-st., a block of building land, 16,101 yds., f.	4,830

By D. SMITH, SON, & OAKLEY (at Plymouth).

Ermington, Devon.—Enclosures of land, 14 a. 2 r. 22 p.	£1,825
"New Mills House," and 4 a. 1 r. 28 p., f.	680
"The Fawns," and "Fawn Farm," 40 a. 2 r. 25 p. f.	3,000
"The Strode Farm," 126 a. 3 r. 6 p., f.	3,750
Modbury, Devon.—Enclosures, 22 a. 3 r. 3 p., f.	1,860
Holbeton, Devon.—"The Union Inn," and 1 a. 0 r. 2 p., f.	800
Kingston, Devon.—Enclosures, 21 a. 1 r. 39 p., f.	510
A Freehold House, and 3 r. 23 p.	150
Newton Ferrers, Devon.—House, 2 cottages, and 1 r. 19 p., f.	565
"Court Farm," and "Court Wood," 173 a. 1 r. 18 p., f.	4,600
"Clannacombe Farm," 42 a. 0 r. 38 p., f.	1,000
Holbeton, Devon.—"Carswell Farm," 153 a. 0 r. 39 p., f.	3,800
"Keaton Farm," 174 a. 0 r. 5 p., f.	5,100
"South Battisborough Farm," 186 a. 2 r. 22 p., f.	3,670
"Wonwell Farm," 22 a. 3 r. 2 p., f.	660

By FULLER, MOON, & FULLER (at Croydon).

Croydon.—45, Heathfield-rd., f., r. 80l.	1,200
56, South End, f.	780
Edridge-rd., "Milton Cottage," and "L'Abri," f. r. 80l.	1,390

October 16.—By Messrs. SPELMAN (at Norwich).

Norwich.—Colegate-st., freehold manufacturing premises, including machinery, fixtures, &c.	2,575
Colegate-st.—Freehold residence and stabling	1,100

By R. M. ENGLISH (at Market Weighton).

Market Weighton, Yorks.—Enclosure of land, 9 a. 0 r. 15 p., f.	350
Shipton, Yorks.—Farmhouse and enclosures, 120 a. 2 r. 11 p., f.	3,250

October 19.—By R. A. NOTLEY.

Battersea.—3, High-st., and "Oak Wharf," f.	1,400

By CARTER & Co. (At Blackpool).

Blackpool, Lancashire.—The Promenade, "The Britannia Hotel," f.	18,700

By DANIEL, SON, & MEREDITH (at Aberystwyth).

Glandovey (near), Cardigan.—"The Bwlcheinon Estate," 305 a. 2 r. 11 p., f.	3,150

October 20.—By BALL, NORRIS, & HADLEY.

City.—Great St. Helen's.—F.g.r. of 325l., reversion in 65 yrs.	12,150

By BRADSHAW BROWN.

Millwall.—175 and 177, West Ferry-rd., u.t. 15½ yrs., g.r. 5l. 10s.	295

By WALTER HALL.

Hoxton.—27, 28, 29, and 30, Newton-st.. u.t. 35½ yrs., g.r. 17l., r. 134l.	1,055
Chiswick.—Chiswick-lane, "Oakbrook" and "Riversdale" (carcases) u.t. 93¾ yrs., g.r. 18l., e.r. 130l.	550

By DEBENHAM, TEWSON, & Co.

Tottenham.—504, 506, 508, and 510, High-rd., area 16,500 ft., f., r. 135l.	3,000
Pall Mall.—Whitcomb-st., f.g.r. 50l., reversion in 90 yrs.	1,370
Walworth.—Montpelier-st., "The Nugget of Gold" Off-Licensed Beer House, f., r. 40l.	£750
Finsbury Park.—St. Thomas-rd., f.g.r. 14l. 14s., reversion in 82 yrs.	370
Finchley.—Ballard's-lane, f.g.r. 26l. 12s., reversions in 83 and 82 yrs.	670
Lincoln-rd., f.g.r. 6l. 10s., reversion in 95 yrs.	170
New Southgate.—Upper Park-rd., f.g.r. 5l., reversion in 72 yrs.	135
Bowes Park.—Carlton-rd., f.g.r. 42l., reversion in 85 yrs.	1,160
Willesden.—Shrewsbury-rd., f.g.r. 28l., reversion in 83 yrs.	720
Shrewsbury-rd., f.g.r. 28l., reversions in 83 and 85 yrs.	730
Hill Side, f.g.r. 8l. 10s., reversion in 90 yrs.	235
Acton.—The Parade, f.g.r. 24l., reversion in 85½ yrs.	620
Walham Green.—Cassidy-rd., f.g.r. 5l. 5s., reversion in 86 yrs.	135

By H. HENDRIKS (at Birmingham).

Birmingham.—183 and 184, Cattell-rd., u.t. 65¾ yrs., g.r. 7l. 11s. 4d.	620

By T. G. PARKER (at Thirsk).

Thornton-le-Moors, Yorks.—"Whittaker Hill Estate," 105 a. 3 r. 31 p., f. and c.	3,000

October 21.—By ALLAN BOOTH.

Camden Town.—12, Torriano-av., u.t. 47½ yrs., g.r. 5l., e.r. 42l.	350
Holloway.—117, Brecknock-rd., u.t. 60¾ yrs., g.r. 4l., e.r. 75l.	662

By H. E. FOSTER & CRANFIELD.

Enfield.—Clay-hill, "Hill Lodge," and about 21 a., f.	5,200
Clay-hill, two freehold cottages	320

By DOUGLAS YOUNG.

Stratford.—19 and 21, Manbey-st., u.t. 63 yrs., g.r. 2l. 10s.	325
Ilford.—Granville-rd., "Lindhurst," f., r. 3l.	530
Beckenham.—Langley-rd., "Sunnyside," f., r. 40l.	490

By J. KITTOW (at Holsworthy).

Milton Damerel, Devon.—"Derworthy Barton Estate," 358 a. 1 r. 39 p., f.	4,000

By LEWENDEN & SON (at Hull).

Hornsey, Yorks.—"Bulson's Field," 3a. 2r. 8p., c.	315

October 22.—By BELL & WILLATS.

Old Kent-rd.—20, 22, 24, and 26, Mawbey-rd., u.t. 21 yrs., g.r. 5l.	545

By HUMBERT, SON, & FLINT.

Kilburn.—27, Priory Park-rd., u.t. 68½ yrs., g.r. 10l., e.r. 48l.	475

By C. C. & T. MOORE.

Mile End.—Globe-rd., &c., c.g.r. 15l. 10s., reversion in 7 yrs.	980
Globe-rd., &c., f.g.r. 15l., reversion in 15 yrs.	960
Devonshire-st., f.g.r. 9l. 17s. 6d., reversion in 12 yrs.	740
Devonshire-st., f.g.r. 7l. 3s., reversion in 16 yrs.	265
Hoxton.—15, 16, and 17, Myrtle-st., f., r. 94l.	1,170
St. John's-rd., a Freehold Rental of 69l. for 17½ yrs.	1,820

Bow.—188, Bow-rd., f., r. 100*l.* £1,610
Rotherhithe.—Dodd's-pl., f.g.r. 20*l.*, reversion in 60 yrs. 460
Forest Gate.—17, 19, and 21, Vansittart-rd., f., 66*l.* 6*s.* 630

By NEWBON & Co.

Islington.—2, Compton-ter., u.t. 20¾ yrs., g.r. 10*l.* r. 73*l.* 10*s.* 600
Barnsbury.—59, Wellington-rd., u.t. 61½ yrs., g.r. 5*l.*, r. 40*l.* 325
Holloway.—38, Stock Orchard-cres., u.t. 45½ yrs., g.r. 9*l.*, r. 40*l.* 325
Clerkenwell.—8 and 9, Thomas-st., u.t. 13 yrs., g.r. 13*l.* 110
Haggerston.—3, 5, 7, 9, and 11, Stean-st., u.t. 12 yrs., g.r. 4*l.* 450
Lambeth.—30 to 40 (even), Tanswell-st., u.t. 12½ yrs., g.r. 31*l.* 10*s.* 450
Mile End.—5 and 6, Eagle-pl., u.t. 374 yrs., g.r. 8*l.* 430
Forest Gate.—272, Romford-rd., and a forge, u.t. 908 yrs., g.r. 7*l.*, r. 42*l.* 575
278 and 280, Romford-rd., u.t. 900 yrs., g.r. 14*l.*, r. 68*l.* 1,450
298 and 300, Romford-rd., and 1 and 2, Nursery-lane, u.t. 908 yrs., g.r. 10*l.*, r. 88*l.* 1,520
Mile End.—120, Cambridge-rd., f., r. 39*l.* 735
Stratford.—372, High-st., f., r. 120*l.* 3,000
High-st., a freehold rent of 225*l.* for 79 yrs. 5,050

By DICKINSON & RIGGALL (at Brigg).

Goxhill, &c., Lincs.—"The Priory Farm," 347 a. 1 r. 38 p., f. 6,500

By H. HENDRIKS (at Birmingham).

Birmingham.—81 and 82, Cheapside, and 2 houses in rear, f. 780
Sparkhill, Worcester.—66, 67 and 68, Dolphin-road, u.t. 78½ yrs., g.r. 7*l.* 10*s.* 410
Selly Oak, Worcester.—22 to 32 (even), 51, 56 to 64 (even), Lottie-rd., u.t. 94 yrs., g.r. 30*l.* 1,375
Stirchley, Worcestershire.—48 to 60 (even), Charlotte-rd., u.t. 94½ yrs., g.r. 18*l.* 785
11 to 19 (odd), Hunt's-rd., u.t. 95 yrs., g.r. 12*l.* 10*s.* 505

By J. H. BRADWELL & SON (at Mansfield).

Farnsfield, Notts.—"Allamoor Farm," 198 a. f. and c. 5,742

By RICHARDSON & TROTTER (at York).

West Lilling, Yorks.—A freehold farm, containing 213 a. 0.r. 37 p. 8,120

October 23.—By F. J. BISLEY & SONS.

Bermondsey.—39, 41, and 43, Anchor-st., and 319 to 327 (odd), Lynton-rd., u.t. 41 yrs., g.r. 30*l.* 15*s.* 1,700
78 and 79, Willow-walk, u.t. 29½ yrs., g.r. 8*l.* 16*s.* 385
1, Alfred-st., u.t 19½ yrs., g.r. 5*l.* 5*s.*, e.r. 40*l.* ... 158

By FORTESCUE & BRANSON.

Edgware-rd.—8, 9, 10, and 11, Bell-st., f., r. 195*l.* ... 3,580

By E. & S. SMITH.

Clerkenwell.—20 and 21, Sekforde-st., u.t. 17 yrs., g.r. 8*l.* 8*s.* 440
32, Lloyd's-row, u.t. 34½ yrs., g.r. 12*l.* 10*s.*, e.r. 50*l.* 175
Highbury.—43 and 45, Elwood-st., u.t. 79 yrs., g.r. 13*l.* 380
Camberwell.—8 to 14, Bloxham's Buildings, u.t. 83 yrs., g.r. 27*l.* 15*s.* 125
Caledonian-rd.—39, Story-st., u.t. 48 yrs., g.r. 6*l.*, r. 52*l.* 230
Islington.—195 and 197, Ball's Pond-rd., and 1a. Wall-st., u.t. 24 yrs., g.r. 6*l.*, r. 98*l.* 720
Kingsland.—59, 61, 63, and 65, Loanda-st., u.t. 22½ yrs., g.r. 12*l.*, r. 104*l.* 525
Holloway.—49 and 51, St. John's-rd., u.t. 52 yrs., g.r. 15*l.*, r. 60*l.* 420

By H. DUKE & SON (at Beaminster).

Beaminster, Dorset.—"Parnham House," and 70 a. 2 r. 14 p., f. 6,500

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.

Greenheart, B.G.	ton	£ s. d. / £ s. d.
Teak, E.I. ..loaded		12/0/0 / 26/0/0
Sequoia, U.S.ft.cu		0/0 / 0/1
Ash, Canada load		2/10/0 / 3/15/0
Birch, do.		3/0/0 / 4/15/0
Elm, do.		3/5/0 / 4/10/0
Fir, Dantsic, &c..		2/0/0 / 4/0/0
Oak, do.		2/15/0 / 3/15/0
Canada		4/15/0 / 6/0/0
Pine, Canada red		0/0/0 / 0/0/0
Do. Yellow		2/0/0 / 4/0/0
Lath, Dantsic, fath		4/10/0 / 5/10/0
St. Petersburg..		5/0/0 / 6/10/0
Wainscot, Riga &c., log		2/5/0 / 4/10/0
Odessa, crown		2/5/0 / 4/10/0
Deals, Finland 2nd & 1st std	100	7/0/0 / 8/10/0
Do. 4th & 3rd		7/0/0 / 8/0/0
Do. Riga		6/10/0 / 7/10/0
St. Petersburg, 1st yellow		10/0/0 / 12/10/0
Do. 2nd yellow		8/0/0 / 10/0/0
Do. white		8/10/0 / 10/0/0
Swedish		7/0/0 / 15/10/0
White Sea		8/0/0 / 15/0/0
Canada, Pine 1st		21/10/0 / 22/0/0
Do. do. 2nd		14/10/0 / 15/0/0
Do. do. 3rd, &c.		7/0/0 / 9/10/0
Do. Spruce, 1st		7/10/0 / 9/10/0
Do. do. 3rd and 2nd		7/5/0 / 8/0/0
New Brunswick		6/0/0 / 7/0/0
Battens, all kinds		5/0/0 / 20/0/0
Flooring boards, sq., 1 in. prep. 1st		0/10/0 / 0/15/0
Do. 2nd		0/5/6 / 0/10/0
Other qualities—		0/4/6 / 0/6/0
Cedar, Cuba, ft.		/4½ / /5
Honduras, &c.		/4 / /5
Mahogany, Cuba		/4½ / /8
St. Domingo cargo av.		/4½ / 1/3
Mexican, do. do.		/4 / /5
Tobasco, do. do.		/5 / /7
Honduras, do.		/5 / /6½
Box, Turkey	ton	4/0/0 / 15/0/0
Rose, Rio		7/0/0 / 16/0/0
Bahia		8/0/0 / 15/0/0
Satin, St. Doming		0/0/7 / 0/1/0

TIMBER *(continued)*.

Satin, Porto Rico		0/0/7 / 0/1/6
Walnut, Italian		0/0/3 / 0/0/7

METALS.

Iron—Pig, in Scotland	ton	2/8/7½ / 0/0/0
Bar, Welsh, in London		5/15/0 / 5/17/6
Do. do. at works in Wales		5/10/0 / 5/12/6
Do. Staffordshire, in London		5/15/0 / 6/10/0
COPPER—British cake and ingot		51/0/0 / 51/10/0
Best selected		53/15/0 / 54/10/0
Sheets, strong		58/0/0 / 59/0/0
Chili bars		49/7/6 / 0/0/0
YELLOW METAL		0/0/4 / 15-16 0/0/5⅛
LEAD—Pig, Spanish	ton	11/7/6 / 11/10/0
English com. brands		11/10/0 / 11/15/0
Sheet, English 6 lbs. per sq. ft and upwards		12/12/6 / 0/0/0
Pipe		13/2/6 / 0/0/0
ZINC—English sheet	ton	20/0/0 / 0/0/0
Vieille Montagne		21/0/0 / 0/0/0
Spelter		17/11/3 / 17/12/6
TIN—Straits		59/0/0 / 0/0/0
Australian		60/17/6 / 0/0/0
English Ingots		63/0/0 / 64/0/0
Banca		60/10/0 / 61/0/0
Billiton		59/15/0 / 60/0/0

OILS.

Linseed	ton	16/2/6 / 16/7/6
Cocoanut, Cochin		28/10/0 / 0/0/0
Do. Ceylon		24/5/0 / 0/0/0
Palm, Lagos		24/10/0 / 0/0/0
Rapeseed, English pale		28/0/0 / 0/0/0
Do. brown		26/10/0 / 0/0/0
Cottonseed refd.		26/15/0 / 27/15/0
Oleine		29/0/0 / 0/0/0
Lubricating U.S.	gal.	0/6/3 / 0/7/6
Do. black		0/4/9 / 0/6/6
TAR—Stockholm	barrel	0/0/0 / 0/0/0
Archangel		0/12/6 / 0/0/0
Turpentine	ton	21/5/0 / 0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender: and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BARNSLEY.—For the execution of street works, Central-street and three others, Hoyland Common, for the Hoyland Nether Urban District Council. Mr. W. Farrington, C.E., Town Hall, Hoyland Nether, near Barnsley:—

M. A. Hague	£652 17 0	W. Johnson	£576 14 6
W. Doleman	643 19 5	George Eyre, Sheffield (accepted)	557 8 6
Frank Eyre	616 1 0		

BEXHILL.—For the erection of business premises in St. Leonard's-road, for Messrs. Kinnis & Co. Mr. Wm. Cooper, architect, 21, Havelock-road, Hastings. Quantities by the architect:—

W. Coussens	£905	W. E. Warman	£885
Eldridge & Cruttenden	890	F. Cruttenden, St. Leonard's*	820
Chas. Young	895		
Padgham & Hutchinson	890		

* Accepted.

BRISTOL.—For making Upper-street, Totterdown, for the Long Ashton Rural District Council. Mr. J. M. Froud, Surveyor, 1, St. Stephen's-chambers, Bristol:—

W. J. Mereweather	£275 0 0	W. Hurford	£246 6 6
Hughes & Weeks	262 10 0	Lloyd & Sons, Yatton*	237 1 4
M. Durnford	259 0 0		
Thomas & Webb	256 1 10		

* Accepted.

CLYDACH.—For Congregational chapel at Pontycrwys, near Clydach. Mr. W. W. Williams, architect, Island-chambers, Windstreet, Swansea:—

Lewis & Davies	£1,928 0	Thomas & Jones*	£1,665 10

* Accepted.

COBHAM (Surrey).—For the erection of a pair of shops, stabling, &c., for Mr. T. Lucas. Mr. Hy. A. Whitburn, architect, 7, Broadway, Woking:—

A. Newland, Cobham £1,765

COLCHESTER.—For making-up Pownall-crescent-road and Meyrick-crescent-road, for the Corporation. Mr. H. Goodyear, C.E., Stanwell-street, Colchester. Quantities by Engineer and Borough Surveyor:—

	Pownall-crescent.	Meyrick-crescent.
G. Dobson	£982 0 0	£635 0 0
G. Bowles	885 12 8	583 17 6
Everett & Son	856 0 0	540 0 0
G. Sansom	853 9 8	533 16 0
G. Rackham	778 0 4	526 8 6
W. Chambers	769 0 0	499 0 0
J. Moran & Son	767 16 9	489 4 1
W. Howard & Son, Maidenburgh-street, Colchester*	667 16 4	429 0 6

* Accepted.

EALING.—For structural and sanitary repairs, and interior decorations at 4, Cleveland-road, Ealing, for Mr. H. Weber Brown. Messrs. F. J. Eedle & Meyers, architects:—

G. Colls	£713	A. Tillotson*	£636
Antill & Co.	700		

* Accepted.

EDMONTON.—For building warehouse at Edmonton, for Mr. J. Barrett. Mr. H. W. Dobb, architect, 110, London Wall, E.C.:—

Brown	£1,635	Monk, Edmonton*	£1,559
Good	1,578		

* Accepted.

EXMOUTH.—For alterations and decorations to dining-room, Exmouth, Devon. Mr. J. R. Manning, architect, Milkwood Estate Office, Herne Hill, S.E.:—

H. Dart	£258 7 6	T. Abell	£224 0 0

For Fittings.

W. Thompson	£98 10 0	W. Wallace & Co.	£94 11 3

FOLKESTONE.—For alterations to No. 63, High-street, and 19, Tontine-street, for the International Stores Co., Limited. Mr. Cooper, architect, 21, Havelock-road, Hastings:—

W. Dunk	£1,437 0	R. Coles	£1,126 0
W. J. Adcock	1,372 0	Tapner & Woodman	1,022 0
G. Vigor & Co.	1 304 15	Cox Bros.	1,012 0
J. Petts & Son	1,226 10	T. L. Fearon, Folkestone (accepted)	962 0
A. J. Camburn	1,182 0		

HARROW.—For making-up part of Headstone-road, for the Urban District Council. Mr. T. Charles, Surveyor, High-street, Harrow:—

E. Parry	£1,487 1 0	R. Ballard, Limited	£1,053 10 6
Jones & Co.	1,388 5 0	T. Free & Sons, Maidenhead*	1,038 19 0
H. Downy	1,135 10 6	G. Parsons	895 10 8
T. Adams	1,055 7 6		

* Accepted.

HORSELL (Surrey).—For the erection of residence, Horsell Grange, for Mr. R. Gale. Mr. Hy. A. Whitburn, architect, 7, Broadway, Woking. Quantities by Mr. E. C. Pinks, 45, Parliament-street, S.W.:—

Martin, Wells & Co.	£2,800	J. Martin	£2,297
Higlett & Hammond	2,597	G. Hooker	2,285
Johnson & Co.	2,527	G. Kemp, Aldershot*	2,189
Wallis	2,447	A. A. Gale	2,161
Harris & Son	2,337		

* Accepted (reduced).

HORSELL (Surrey).—For the erection of residence, Albany-road, Horsell Grange, for Mrs. C. Brothers. Mr. Hy. A. Whitburn, architect, 7, Broadway, Woking. Quantities by Mr. J. T. Carew, 22, Surrey-street, Strand, W.C.:—

Higlett & Hammond	£1,497	Ingram & Son	1,375
J. Martin	1,398	Harris & Son	1,350
T. Kemp	1,395	G. Hooker, Basingstoke*	1,245

* Accepted (reduced).

LARNE (Ireland).—For the construction of water-supply works, for the Town Commissioners. Mr. J. H. H. Swiney, M.Inst.C.E., Avenue-chambers, Belfast. Quantities by engineer:—

T. Gregg	£4,090 10 0	Hegarty & Gault, Larne*	£3,103 11 5
J. McKee	3,663 17 4	Wm. McLarnon	2,693 2 1
R. I. Stewart	3,651 16 10		
J. McNally	3,197 16 4		

* Accepted.

HULL.—For the execution of water-supply works, for the Sculcoates Rural District Council. Mr. W. H. Wellsted, engineer, Prince's Dock Chambers, Hull:—

No. 1 Contract.—Tank and Engine House, Tank, Engine, Well Sinking.

R. D. Batchelor	£5,402 10 5	Brumby Robinson	£1,550 0 0
E. Timmins & Co.	4,546 7 9	J. Villiers, Beverley*	1,494 4 6
F. Pattison & Co.	1,729 0 7	S. Taylor	1,410 0 0

No. 2 Contract.—Pipe Laying, Valves, Boxes, Fire Plugs, &c.

F. Pattison & Co.	£1,112 19 0	J. Wittlam	£913 17 [illegible]
J. Elson	1,110 8 6	W. L. Harrison	848 18 2
J. Villiers	965 4 8	Thos. Bell, Market Weighton*	823 19 6
H. B. & A. F. James	945 2 0		
A. Brunton & Son	921 2 8		

* Accepted.

LEAMINGTON.—For the supply of 3,500 tons road stone, for the Corporation:—

		Per ton s. d.
W. A. Judkins, Little Hill Quarries, Nuneaton.	2 in. hand-broken	7 0
Do.	2 in. machine	7 0
Do	Spalls (*a*)	5 9
Do.	Chippings (*b*)	4 10
Croft Granite Co., Croft, near Leicester,	2 in. hand-broken	8 7
Do.	do. 2 in. machine (*c*)	7 9
Do.	do. Spalls	—
Do.	do. Chippings (*d*)	4 7
Clee Hill Granite Co., Ludlow,	2 in. hand-broken	11 1
Do.	do. 2 in. machine „ (*e*)	12 7
Do.	do. Spalls	8 6
Ko.	do. Chippings (*f*)	8 9

(*a*) Accepted for 1,500 tons
(*b*) „ „ 300 „
(*c*) „ „ 1,000 „
(*d*) „ „ 950 „
(*e*) „ „ 500 „
(*f*) „ „ 125 „

LEICESTER.—For the erection of smith's and wheelwright's shops, &c., Jarvis-street-yard, for the Sanitary Committee. Mr. T. W. Pettifor, architect, Berridge-street-chambers, Leicester. Quantities by the architect:—

F. Elliott	£1,490 0 0	J. E. Johnson & Son	£1,428 17 0
E. Bentley	1,480 0 0	J. Chapman	1,419 0 0
T. & H. Herbert	1,478 10 0	G. Holt	1,405 10 0
E. Fox	1,477 3 9	Bowles & Son, Gladstone-st., Leicester*	1,395 0 0
Riddett & Son	1,442 0 0		
Tyers & Yates	1,429 7 0		

* Accepted.

LONDON.—For the supply of York paving, granite kerb, &c., Sun-street, Woolwich, for the Local Board. Mr. H. O. Thomas, Surveyor, Town Hall, Woolwich:—

1,700 Yards Super. York Paving, at per Yard Super.

	s. d.		s. d.
Turner	7 0	W. Griffiths, Kingsland-road, N.E.*	6 6
A. & F. Manuelle	6 8½		
Cooper	6 7		

450 ft. run 12 in. by 6 in. Aberdeen Flat Kerb; 50 ft. run 12 in. by 6 in. Aberdeen Circular Kerb.

	Straight. s. d.	Circular. s. d.
Cooper	1 8½	1 10½
Manuelle, Leadenhall-street, E.C.*	1 8½	1 10½

350 Yards Cube Pea Gravel.

Thames Sand Co.	£94 18 9	Tuff & Miskin, Woolwich*	£86 5 0
Griffiths	93 10 0		

150 Yards Cube Grit Sand.

Tuff & Miskin	£46 12 6	Griffiths, Kingsland-road*	£39 7 6
Thames Sand Co.	42 1 3		

* Accepted.

LONDON.—For making up and paving Ringmer-avenue Sec. I.:—

	Roadway.	York.	Adamant.	Victoria.	Imperial.
	£	£	£	£	£
Nowell & Robson	255	149	59	..	..
Mears	220	..	..	..	..
Adamant Stone Co.	..	..	99 4 6	..	..
Parry	217	150	..	..	..
Victoria Stone Co.	..	..	..	109	..
Wimpey & Co.	235	147	106	..	113
Imperial Stone Co.	..	..	..	..	95
J. Ball	140	..	..	..	..

LONDON.—For extension of pipe and stove factory, Lambeth, for Messrs. Doulton & Co. Messrs. Waring & Nicholson, architects, 55, Parliament-street, Westminster:—

Higgs & Hill	£4,564	W. King & Son	£3,966
C. Ansell	4,076	John Marsland	3,875
Wm. Smith	4,070	Turtle & Appleton	3,749
T. Lapthorne & Co.	3,998		

LONDON.—For a movable floor and platform at the Bow Public Baths, for the Bow Vestry. Messrs. Harner & Pinches, architects. Quantities by Mr. A. K. Bull:—

A. J. Sheffield	£669 0	Thomerson & Son	£383 10
S. Lessner	450 16	J. T. Robey*	379 0
Eaton & Co.	437 0	W. Lawrence	375 0
General Builders, Limited	386 10	Buckeridge Bros.	365 0

[Surveyor's estimate, £382.]

* Accepted.

LONDON.—For erecting new warehouse, Bankside, Southwark, for Messrs. Craig & Rose. Messrs. Pennington & Son, architects:—

Gould & Brand	£5,324 0 0	A. Eaton & Co.	£4,520 0 0
T. Rider & Son	5,265 0 0	H. Line	4,400 0 0
G. J. Newton	5 213 0 7	Killby & Gayford	4,396 0 0
Beer & Gash	5,159 0 0	C. Wall	4,362 0 0
W. Smith	4,794 0 0	S. Chafen & Newman	4,342 0 0
G. Parker	4,725 0 0	H. Wall & Co.	4,278 0 0
Warburton & Goldring	4,622 10 0		

LONDON.—For repairs to five public-houses, viz., "Cock" and "Tiger," Camberwell, the "Elephant & Castle," "Royal Vauxhall," and "Bridge House," Vauxhall. Messrs. Bedle & Meyers, architects:—

Jerrard	£794	F. Webster & Son	£665
Amos	738	Smith	644
Easton	707	Parsons	643

LONDON.—For alterations and improvements, 11, Savile-row for Mr. J. Walker, New York:—

S. & S. Dunn £1,345

LONDON.—Accepted for pulling down and rebuilding Nos. 12 and 12, Gosfield-street, for Mr. G. Gosney. Mr. Robert Willey, architect, 33, New Bridge-street, Blackfriars:—

Messrs. Foord & Son, Brentford £1,850

LONDON.—For repairs, redecorating, and new lavatory, &c., at the Vestry Hall, for the Vestry of St. Anne's, Soho, W. Mr. Percy J. Waldram, surveyor, 17, Buckingham-street, W.C. :—

Barrie Bros.	£207 10	H. Hocking	£234 15
Laing & Son	271 10	Biggs & Sons	230 0
Love & Co.	270 19	T. Nicholson*	215 6
McLachlan & Sons	245 0		

* Accepted.

LONDON.—For rebuilding 4, Goodge-street, Tottenham Court-road, W., for Messrs. E. Catesby & Sons. Mr. Hy. A. Whitburn, architect, 7, Broadway, Woking. Quantities by Mr. J. T. Carew, 22, Surrey-street, Strand, W.C. :—

Brown & Harris	£2,191	Jarvis & Son	£1,755
F. & F. J. Wood	2,153	Burman & Son	1,725
Mattock Bros.	1,791	T. Sobey, Lambs Conduit-street, W.C. (accepted)	1,696
Pitcher	1,771		

LONDON.—For the supply of circulating and air pumps for the ferry-boat *Hutton*, for the London County Council :—

Naval Construction and Armaments Company	£1,200
John Penn & Sons	675

LONDON.—For alterations to the "Falcon" public-house, No. 274, Great College-street, Camden Town, N.W., for Mr. Joseph Webb. Mr. A. J. Perriam, architect, 52, St. John's-villas, Holloway, N. :—

Marchant & Hunt	£369 0	Toms (too late)	—
Bloomfield & Evans*	321 16		

* Accepted.

MANSFIELD WOODHOUSE (Notts).—For the erection of nine houses :—

Turner	£1,800	C. Vallance	£1,380
W. Vallance	1,758	J. F. & G. W. Moore, Bulwell*	1,260
W. Cuddy	1,670		
Barns & Tate	1,445		

* Accepted.

MORLEY (Yorks).—For the erection of five scullery-houses, Troy-road, for Messrs. A. & T. Scholes. Mr. T. A. Buttery, architect, Morley, Yorks :—

W. & H. Sykes	£523 11 0
N. Holroyd	225 10 0
G. A. Firth	24 18 8
E. Wilson	51 15 0
J. Atkinson & Son	41 0 0

NEWBURY.—For additions, &c., to Primitive Methodist Church, for the Trustees. Mr. W. H. Bell, architect, The Market-place, Newbury :—

E. & H. James	£295	Geo. Elms & Sons, Newbury (accepted)	£225
Geo. Head	289		

NEWMILNS (N.B.).—For the erection of a county constabulary station. Mr. J. Murdoch, architect, 62, Sandgate-street, Ayr. Quantities by Messrs. Duff & Henderson, Glasgow :—

Building.—M. Muir & Co., Kilmarnock	£835	0 0
Joinery.—Hugh Thomson, Stevenson	320	10 0
Slating.—M. Todd & Co., Newmilns	48	5 1
Plumbing and Gas.—M. Todd & Co., Newmilns	119	16 7
Plastering.—John G. Hutchison, Muirkirk	48	2 8
	£1,362	14 4

NORTHALLERTON (Yorks).—For the supply of 600 yards concrete flags, &c., for the Urban District Council :—
J. Crombie & Son, Middlesbrough, 2s. 7d. per square yard for about 600 square yards.

POOLE.—For the construction of sewerage works, Section No. 2 (Contract No. 4), for the Urban Sanitary Authority. Mr. John Elford, C.E., Poole :—

Pedrette & Co.	£66,900	B. Cooke & Co.	£33,658
T. Adams	49,000	F. Reeks, Lymington*	33 2.0
G. Otenton	45,050	W. H. Saunders & Co.	33,178
T. C. Rigler	35,269		

* Accepted.

PURLEY (Surrey).—For the erection of addition, containing hall, class-rooms, and cloisters, to the Warehousemen, Clerks', and Drapers' Schools, Russell Hill, Purley, Surrey. Mr. J. Kingwell Cole, architect, 17, Hart-street, Bloomsbury-square, W.C. :—

Harris & Wardrop	£13,432	W. King & Sons	£11,995
T. Osborn & Sons	12,820	H. L. Holloway	11,830
Killby & Gayford	12,340	Thomas Gregory & Co.	11,300
E. Lawrence & Sons	12,189	Samuel J. Scott	11,037
F. & H. F. Higgs	12,100	Jas. Smith & Son	10,896
Holloway Brothers	12,000	W. Johnson & Co.	10,470

STAPLEFORD.—For the erection of a bakery and shops, for the Co-operative Society, Limited. Mr. E. R. Ridgway, architect, Long Eaton. Quantities by the architect :—

Donnelly & Sons	£1,643	Jno. Martin, Stapleford*	£1,553
Geo. Youngman	1,635	L. Susannack	1,500
Jno. Brown	1,609		

* Accepted.

SWANSEA.—For the erection of Congregational chapel at Henrietta-street, Swansea. Mr. W. Watkin Williams, architect, Island-chambers, Wind-street, Swansea. Quantities by the architect :—

David Jenkins	£3,217	0	W. Williams	£2,356	0
Thos. Watkins & Co.	2,967	10	T. Richards	2,325	0
Lloyd Bros.	2,654	0	Weaver Bros.	2,300	0
Bennett Bros.	2,550	0	Jones	2,290	0
Thomas Davies	2,450	0	Henry Billings*	2,230	0

* Accepted.

TURNER'S HILL (Sussex).—For the execution of sewerage works, for the East Grinstead Rural District Council :—

Thomas Adams	£2,769	12 7	Potter Bros.	£1,999	12 0
W. H. Saunders & Co.	2,405	0 0	R. Ballard	1,837	0 0
George Bell	2,394	0 0	E. Powell	1,855	3 0
Stuart & Turner	2,385	19 6	J. Jackson	1 764	4 11
J. Longley & Co.	2,295	0 0	A. C. W. Hobman & Co.	1,750	0 0
R. Loch	2,242	6 0	E. Steer, East Grinstead (accepted)	1,578	0 0
R. R. Facry	2,052	19 0			

WARRINGTON.—For extension of sewer, Manchester-road, to Bruche Bridge, for the Corporation. Mr. Thos. Longdin, C.E., Borough Surveyor, Town Hall, Warrington :—

Sayce & Randle	£397	15 2	F. T. Bennie	£310	9 7
J. Ewart	355	0 0	Thos. Stringer, Warrington*	285	0 0
S. Hutton	353	0 0			
Wm. Heaton	335	0 0			

* Accepted.

WEMBLEY.—For new roads and sewers through the Harrowdene Building Estate, Wembley. Messrs. Walton & Lee, surveyors, 10, Mount-street, Grosvenor-square, London, W. :—

H. Lee	£10,000	0 0	C. W. Killingback & Co.	£7,043	0 0
J. Macklin	9,319	15 6	H. Drury	7,809	3 6
J. Porter	8,499	0 0	R. Ballard, Lim.	6,747	0 0
W. H. Whaler	8,700	0 0	G. Wimpey & Co.	6,700	0 0
J. Jackson	7,700	0 0	S. Hudson	6,544	5 3
Nowell & Robson	7,694	0 0	T. Adams	6,468	0 0
W. Nickolls	7,613	11 0	Rowland Bros.	6,431	8 6
W. Neave & Son	7,313	0 0	E. Parry	6,359	12 0
S. Kavanagh	7,203	0 0	G. Bell	6,149	0 0
G. Osenton	7,201	0 0	H. Hill, Maidenhead*	6,145	0 0
Siddons & Freemand	7,199	0 0	Messrs. Jones & Co.	5,909	0 0
T. Free & Sons	7,170	0 0			
Fry Bros.	7,067	6 3			

* Accepted.

WHITWORTH (Lancs.).—For the execution of sewerage works, &c., for the Urban District Council. Mr. Leonard Hinnell, C.E., 41, Corporation-street, Manchester :—
J. Law, Whitworth, as per schedule of prices.

WOOLACOMBE BAY (North Devon).—For additions to the Woolacombe Bay Hotel, for Messrs. Arnold, Perrett, & Co., Limited. Mr. P. W. Barrett, architect, Wickwar, Glos :—

Hubber & Son	£3,736	0	T. H. Brown, Bristol*	£3,108	10
Burgess & Slee	3,275	0			

* Accepted.

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